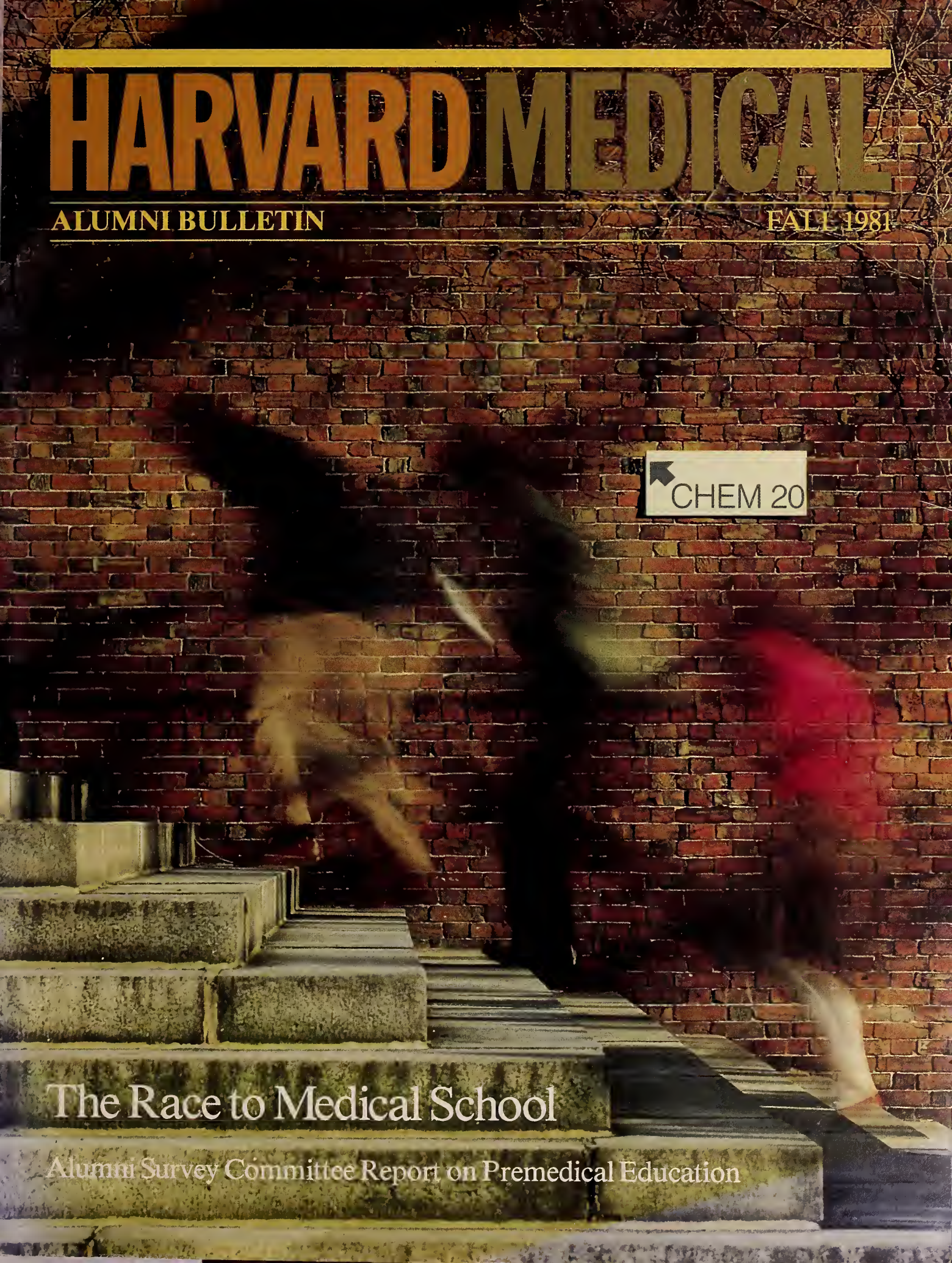
HARVARD MEDICAL

ALUMNI BULLETIN

FALL 1981



The Race to Medical School

Alumni Survey Committee Report on Premedical Education

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HARVARD MEDICAL

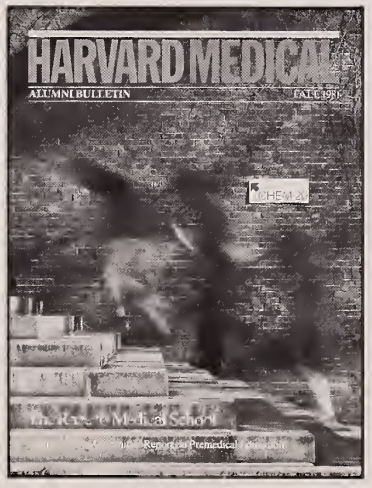
ALUMNI BULLETIN/FALL 1981

VOL. 55, NO. 4

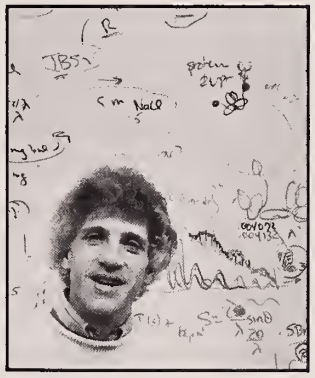
FEATURES

DEPARTMENTS

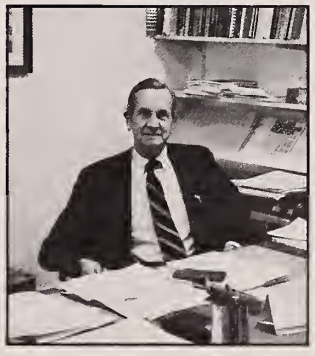
21 "In the opinion of the Alumni Survey Committee, a 'premed syndrome' does exist at the college level and, if carried over into medical school years, can lead to an excessively competitive, cynical, dehumanized, over-specialized and narrow individual. In the simplest form, the 'premed syndrome' is characterized by a race for facts rather than the acquisition of a broad liberal education."



27 "If what 'dehumanized' means is insensitive and inflexible and lacking in curiosity, I don't know that taking an extra couple of English courses at the age of 18 is really going to pull the trigger."



33 "A proper education in mathematics, physics, chemistry and biology is above all an education in clear thinking — and surely clear thinking is 'dehumanizing' only to those who equate 'humane' with 'muddle-minded'."



41 "We encourage applicants to HMS to have a good exposure to the humanities and the benefits of varied life experiences. We do not care what they major in but do emphasize a broad course distribution."

COVER PHOTOGRAPH BY CHRISTOPHER S. JOHNSON

INSIDE H.M.A.B.

The Alumni Survey Report on Premedical Education and Admissions Policies occupies center stage in this issue of the *Bulletin*. It is published with companion pieces by appropriate members of the Faculty of Arts and Sciences as well as faculty and students of the Medical School in the hope of producing a productive dialogue between both sides of the river. It is a subject about which virtually all Alumni have an opinion, and are not averse to voicing that opinion.

Since the Report is, in effect, an open letter to the Deans of both the Medical School and the Faculty of Arts and Sciences and through them to the President of the University, accuracy and clarity of focus are essential. Though, in truth this is a Committee report, the authors have avoided the ambivalence that this implies by identifying themselves and taking the responsibility for their opinions and interpretation of the facts as they see them. That both authors and the chairman are graduates of Harvard College and its Medical School either introduces or eliminates bias as you choose to interpret it.

Undergraduate education faces serious challenges. Certain of these can be specifically identified with students under pressure to gain Medical School admission. The term "premed syndrome" has found a place in our vocabulary through common usage though its definition is imprecise, at best, and by its very sound, pejorative. Certainly the premedical student is variously an object of admiration, envy, distrust, or dismay. Some flaunt their identity; others seek to hide it.

We all, as alumni, can look back upon our own undergraduate education. We can try to relate our experience to the pressures generated in the highly competitive educational process of today, and exclaim, unfortunately with little fear of contradiction, that we couldn't make the grade—not grades—today. Those of us who are fortunate enough to have to do with medical students can admire their many strengths and at times think we can see what they are missing. But it is a matter of proper Alumni concern, and with this in mind, the Report approved by your Alumni Council is here presented.

Gordon Scannell

HARVARD MEDICAL
ALUMNI BULLETIN

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LETTERS

The Harvest of Summer 1981

Note-oriety

The "Alumni Notes" section of the Summer 1981 *HMAB* contained a paragraph falsely attributed to me. It's a little disturbing that someone, possibly a physician, would engage in this type of weird prank. Surprisingly, the *HMAB* editors neglected to verify the authorship of such a callous and self-degrading statement. Perhaps this letter will alert you to the possibility of future counterfeit alumni notes.

Derek Kerr '75

'Gentle Vengeance'

Surely each person's perception of his or her own medical school experience is different. For some the experience may corrupt and harden; for some the experience may help to improve performance under pressure; and for others the experience may be any, or any combination, of innumerable alternative possibilities. *My* perception of *my* experience at Harvard Medical School is still positive as regards my classmates and negative in terms of myself.

Perhaps the necessary and difficult task of a medical school is to provide to its students high quality, comprehensive, and uniform educational and training opportunities in the context of reasonably responding to the unique and changing needs, problems, and abilities of its students, individually and as a group. Medical students, after all, are people, human beings, and not just

learning/doing machines.

The successful medical school will be one that addresses itself to more than just the scientific education and training of its students. Perhaps medical schools and medical students should continually explore the possibility that the unrest about such issues as Saturday classes and lengthy laboratory sessions is a manifestation (or symptom) of other, underlying concerns (or disorders) which may not be resolved (or treated) by such interventions (or treatments) as changes in curriculum contents and/or schedules.

John Cary Cooke III '65

Twillingate Memories

I was delighted to see the article "Seldom Come By" by Clement Hiebert in the Summer 1981 *Alumni Bulletin*. It reminded me of the days I also spent at Twillingate.

I wonder if the *Bulletin* or the Alumni Office know of or have compiled any history of the Twillingate mission. If so, do you know where it can be obtained? Would the Alumni Association be interested in generating such a history?

Michael D. Lockshin '63

A Misalliance?

I have read a little in the *Boston Globe,* and even less (because there has been less) in the *Alumni Bulletin,* about the acceptance of a six million dollar grant from Dupont for the Genetics Department, with the commitment that commercially valuable processes shall be exclusively licensed to that corporation.

Must not such a commitment, in time, come to be a substantial barrier to the free exchange of scientific information which has characterized medical research (lest other research groups develop commercially valuable processes in advance of the Harvard genetics group)? Further, there is the likelihood that a subtle and unspoken bias toward processes of commercial value will be introduced into the Genetics Department. This bias may become more acute when progress reports are submitted and the five-year grant comes up for renewal.

I believe that Duke University, after much discussion, refused a similar offer. Surely, this Dupont arrangement has been much considered within Harvard Medical School, but a full airing of the issues has not reached any forum open to the alumni. As a loyal alumnus, whose favorite annual charity has been the Medical School, I am disturbed more than I can express by the possibility that a division of my medical school may become the partially owned research subsidiary of a giant international corporation.

May we have a full and prompt discussion of these issues?

Arthur J. Garceau '54

Dear Archy

If you are keeping score, I would like to register a vote against the new format for the *Alumni Bulletin.*

An official poll in this area suggests the consensus is that the *Bulletin* now

The editors welcome letters from readers, particularly in regard to articles published recently in the Harvard Medical Alumni Bulletin. *Letters should be brief, double spaced, submitted in duplicate, and marked "for publication." Not all letters can be used; those accepted will become the property of the* HMAB *and may be edited, although we are unable to provide pre-publication proofs.*

ILLUSTRATION BY ALEXA GRACE

closely resembles a drug company promotional release designed to look like a national news weekly.

I hope there will be enough hue and cry to bring back the real *Bulletin*.

Thomas W. Smith '39

Editor's note: A hue and cry can be great fun, unless you happen to be the fox.

As a reasonably faithful reader of the *Bulletin* I should like to register my displeasure with the new format. Instead of presenting what I envision as the image of Harvard Medical School, it seems to be anxious to imitiate a pharmaceutical house publication with touches of the Victorian Age. Please count me among those who feel that the new *Bulletin* is a step backwards.

William W. Faloon '44

The Summer 1981 issue was certainly a great one. What a range of interests, from Moseley to Lew Thomas and Newfoundland to the rather sad feelings of the students.

Nothing concerns me more than to read the students' remarks and to wonder what it is that makes life so difficult now at Harvard Medical School. It would appear from my own memories that while we did have a strenuous curriculum, it was not one that totally exhausted us nor were we as drained as they seem to be as they come to the end of their stint.

There were always activities as well as the purely medical ones which were of a potential relief, both during the week and during the year. In fact, some of us had time to write poetry (which may not have been better than that of Dr. Eckman, although I would match Lew Thomas' material against his any day).

The obituaries of the two great pediatricians in that issue meant a great deal to me. I was an intern at the Chil-

THE BEST MEDICINE BY CASSERINE TOUSSAINT

FIRST PUBLISHED IN *MODERN MEDICINE*

dren's Hospital in the late '30s, and it was always an intriguing experience to make rounds with Dr. Smith for the very reasons set forth in the "In Memoriam." Unfortunately, after we made rounds with him, we would be preparing a therapeutic program only to be informed by the chief resident (Charlie May) that Dr. Blackfan had rather different ideas about the same patient; and we would be forced to shift gears in our choice of treatment.

As your memorial pointed out, however, Dr. Smith was a great man. It was good to know him, as well as to have known Charlie Janeway in later years.

Thanks once more for the excellent edition.

Henry H. Work '37

I greatly appreciate the *Alumni Bulletin.* I enjoy Robert Goldwyn, George Richardson and the others who write so cleanly, and I am delighted by Lewis Thomas. But it was an outright struggle for me to read the Summer 1981 issue! The shifting type size, the tilted, blown-up pictures, broken columns and pop art constantly pried me from the pleasantly thoughtful experience that reading the *Bulletin* has always been.

Or did I miss the point; was it all meant to be a parody of the movie magazines? Perhaps if I read *People* regularly I would find the new format more familiar and readable. On the other hand, if *People* magazine were what I wanted to read I might not have bothered with the *Bulletin* in the first place.

Norris B. Finlayson '57

I have been trying to analyze what is so repulsive about the latest issue of the *Alumni Bulletin,* and have finally come to the conclusion that it's not the literary copy but, like an inflamed carbuncle, it hurts just to look at it. Moreover, I am not the only one left speechless by the banality and cyanotic quality of the cover picture and illustrations in general. They are of College Humor quality and the whole format suffers from being a salesman's dream, but only the salesman's.

As if the innovative balderdash were not emetic enough, on opening the cover one is slapped promptly with staccato changes in type and headlines that flash out as blatantly as the bleats and beats of a rock concert.

Oddly enough, the malformation comes right on the heels of an outstanding issue of the *HMAB* — cover, format, articles, headlines and photographs published last spring, an issue which distilled the quintessence of John Brooks, Joe Garland, Jim Faulkner and all the others way back to the contributions of Allen Gregg and John Fulton. None used much gimmickry, just homework.

Theodore H. Ingalls '33

Your transformed *HMAB* made waves in our office this morning. When the mail came in, our publications staff dropped everything to gawk. Congratulations! It is stunning work. We'll be interested to learn how your readers respond.

continued on next page

We would like to consider mentioning the redesign in a top-margin item of *CASE Currents*. We also would like to ask for more copies. CASE keeps a before-and-after collection of redesigned publications. Will you send us two representative samples of the old and two of the new?

I look forward to hearing from you *and* to seeing the Fall issue (and the Winter, and the Spring...). Once again, wow.

Barbara McKenna
Associate Editor, *CASE Currents*
Council for the Advancement and Support of Education

This morning The Summer 1981 issue of the *Alumni Bulletin* arrived.

Ugh!

I do NOT like the new format.

The type is unattractive.

Black lines separating items are too dark on the page.

The Art work is UGLY, UGLY, UGLY, and I don't see why you need to waste so much space on meaningless "art" work.

And why the blurred photographs?

It looks as if you have gone modernistic, and the *Bulletin* looks like a cheap trade-journal.

It does not have the elegance, dignity, simplicity, refreshing-appearing, relaxing, inviting Format that the previous editors displayed.

Is this a sign of deterioration of the Medical School, or of the modernists who have taken over?

Please go back to the old Format, and also have a better selection of articles. Most of the writing is pointless.

I doubt if you care about my opinion, but thank goodness I was in medical school when it had dignity.

Frank Payne '37

The Matterhorn Revisited

Excavating through a mountain of material from the summer issue, the *Bulletin* editors unearthed a photo which could not be printed because of space limitations. Had there been room, it would have accompanied Robert K. Brown's article, "William O. Moseley: From the Mass. General to the Matterhorn," which described the young physician's tragic death in a climbing accident. The photo indicates the location of Solvay Hut (1), the shelf from which Moseley fell, which now bears his name (2), and the site of Old Hut (3). The dotted line traces the path of Moseley's fall. Dr. Brown happened upon the photo in a journal of the American Alpine Club in a piece by J. Munroe Thorington, and it served as the inspiration for the subsequent *Bulletin* article.

Omission: The photo of Carola Eisenberg which appeared on page 16 of the Summer 1981 issue was taken by Mark Rosenberg '72.

Here is a brief critique of the new "packaging" in which the *HMAB* now appears.

Cover: nauseating

Typography and layout: appalling

Drawing and "art work": pathetic

Overall: disastrous.

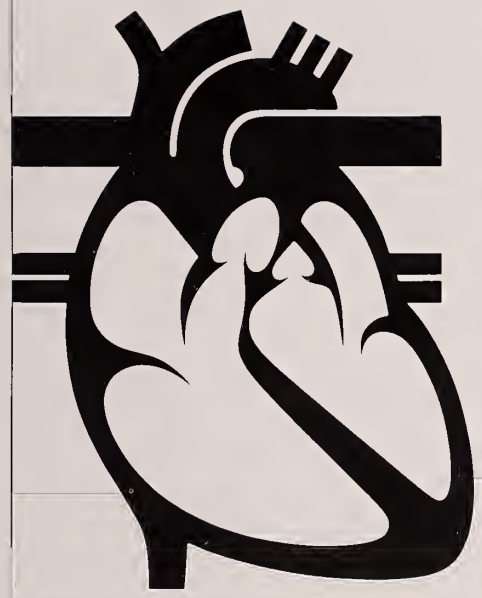
Lester S. King '32

Congratulations on the new graphic design of the *Alumni Bulletin*.

For too long your concise, interesting, and informative writing has been wrapped in a package that appeared to be straight from The Coop.

You are sure to hear the howls of protest from those to whom tradition has no rival. But I hope you continue to profess, as you did in your initial editorial, that the new design "befits an institution at the forefront of medical education, research and patient care." It does.

David Estridge
Vice President, Public Affairs
Children's Hospital Medical Center



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BOOK MARKS

'To Go Among Strangers When Ill'

THE INVENTION OF THE MODERN HOSPITAL — Boston, 1870-1930, by Morris J. Vogel, The University of Chicago Press, Chicago, 1980.

BY TIMOTHY E. GUINEY '66

Starting with an account of a textile worker's 1879 admission to the Massachusetts General Hospital for treatment of a mangled hand (his prescribed therapy consisted of bed rest, dressing changes, and plenty of steak dinners), Morris Vogel unfolds history in *The Invention of the Modern Hospital* with a gift for storytelling. He vividly chronicles the gradual development between 1870 and 1930 of Boston's hospitals as centers of medical care—from the patronizing Protestant stewardship of charity institutions in which no Brahmin would deign to seek medical attention, to the eventual cross-cultural acceptance of hospitals as we now know them.

Vogel doesn't stop at making history come alive: he persuasively reveals that there was far more to the shaping of the modern hospital than the easily explained influence of scientific medicine in the late 1800's, including the strong elements of class discrimination, the swiftly changing American home life, sources of financial support, and the medical attitude toward patients. *The Invention of the Modern Hospital* is in large part a social history, in the tradition of Oscar Handlin's *Boston's Immigrants,* Sam Bass Warner, Jr.'s *Streetcar Suburbs,* and Stephan Thernstrom's *The Other Bostonians*—all of which examine Boston as a paradigm of the changes occurring in other urban areas of the United States at the same time. Boston provides an interesting place to observe social change, and Vogel does it well, drawing his material from the extensive records kept by those who shaped the history—particularly from the Brahmin caste which founded and funded many of the things worth founding and

funding hereabouts, and which the author treats in a not altogether reverential way.

Vogel traces the social, economic, and scientific roles of the hospital against the inevitable class conflict between Brahmin social concerns and immigrant needs. In addition, he details the culture of science, and the slow and gradual emergence of the public perception that hospitals had enough to offer that a reasonable middle class person might choose to go among strangers when ill, a notion inconceivable at the time the MGH opened in 1821.

He sketches the social landscape in broad strokes and immediately attracts the eye of the reader more accustomed, perhaps, to the comfortable view that present-day hospital care takes no notice of class. Unless utterly destitute or without family, patients of that era preferred that medical care be provided at home, even that surgery be performed on kitchen tables. Birth, sickness, and death were events which took place within the family.

As the waves of immigration hit Boston, hospital patients were not only poor, but were likely to be foreigners, further lowering the status of hospitalization in the eyes of the more comfortable public. Lying-in hospitals in particular had an unenviable reputation, since respectable women of all social classes bore their children at home. Only the most desperate, often bearing illegitimate children, were likely to seek out lying-in hospitals, which differed from the even more wretched "rooming house" lying-ins because they were managed by private charity rather than bordellos.

The issue of charity was central to both the social image and financial support of the early hospital. The supporters of the MGH, for example, subscribed to the doctrine of stewardship. The physicians on the staff were both a professional and a social elite, who for the most part provided their services gratis, and a number of family medical dynasties were prominent in the affairs of the MGH and other Boston hospitals. Dr. Henry J. Bigelow discussed in 1871 the "two classes of the profession," by which he meant those who merely made their living from medicine as distinguished from those who had the leisure, funds, and intellectual gifts to contribute to its development.

The patients of the MGH in the mid 1800's tended to be those over whom stewardship needed to be exercised. Vogel has a sharp eye for the baroque and has, with obvious delight, unearthed some attitudinizing about the worthiness of the Irish on the part of the MGH trustees, who claimed that "the admission of such patients creates in the minds of our citizens that prejudice against the hospital, making them unwilling to enter it—and thus directly to lower the general standing and character of its inmates."

The advent of the Boston City Hospital added a new institutional player to the local scene. Founded in 1864, it was immediately enveloped in controversy. Some members of the City Council felt that the new hospital should be more of an almshouse for those turned away from the MGH (the contagious and incurable). Others suc-

ILLUSTRATION BY ALEXA GRACE

cessfully fought to make the BCH a municipally funded equivalent of the MGH. "Hence," recorded the Council, "we would not have this a hospital for the reception of the degraded victims of vice and intemperance, or as a home for the hopeless pauper; but we would have it regarded as an asylum for the industrious and honest mechanic and laborer."

Vogel also quotes a number of addresses given at the dedication of the BCH, letting his readers discover for themselves the tone of moral uplift and social control so prominent among the upper classes of the day and their political representatives. One such, by Mayor Frederick Lincoln, asked the hospital board to distinguish "between the virtuous poor who have a claim on your sympathy and the vicious who are suffering the penalties of their vices."

Hardly had the place been opened, Vogel tells us, when friction developed between those who feared immigrant power and the clients of the BCH—who looked upon the hospital as theirs, paid for out of taxes. Despite maneuvering by the state legislature to wrest control of the BCH from the City Council, there were continued demands for physicians from non-elite backgrounds, the establishment of evening clinics, and change in admission policies: the hospital had begun to be regarded as a community institution.

As the notion of progress began to gain currency in the late nineteenth century, scientific advances in medicine quickened the expectations of the public. Physicians' view of themselves also changed. Originally their attitudes were derived quite precisely from their social class, which was identical to that of the founders and supporters of the hospitals. As opportunities increased for hospital physicians to be more involved in scientific medicine, the social concerns of the 1900's were replaced with medical concerns.

The possibilities of a broader scientific and intellectual basis for medicine impressed President Eliot of Harvard as the turn of the century approached. Eliot fought to move HMS and the increasingly inbred hospital staffs in the direction of the university hospital model which was flourishing in Baltimore at Johns Hopkins, founded only a few short years earlier. The focus here is on the shaping of the Peter Bent Brigham, the politics of which gave strong direction to the relationship between HMS and the several affiliated hospitals—and which Vogel sees as a pivotal point not only in the development of Harvard medicine, but also in the growth of hospitals as institutions in this city and elsewhere.

The direction of modern medicine was by this time quite clear, and it also became clear that accommodations for treating other than the poor in hospitals needed to be provided, in part because urban life was radically changing for the middle class. The household could no longer support care of the sick and injured the way it had in an example Vogel gives us early in the book—when after an 1887 commuter train crash near Roslindale most of the nearly 100 victims were taken to their homes, regardless of the severity of their injuries. Boston was changing: single people lived alone in rented apartments or rooming houses, the student population inhabited dormitories, and families were becoming smaller.

The hospitals also needed paying customers: they could no longer support their expanded activities out of income on endowment. For some years a debate raged about charging professional fees, particularly at the MGH. The older physicians insisted that to garner fees in a charitable institution was an immoral violation of the tradition of stewardship. No doubt, the independent means of many of them allowed them to hold the high ground with a minimum of distress. By 1904, the MGH was generating a third of its operating budget from room and board fees of private patients, and this inherent contradiction of policy was brought to the MGH Trustees' attention by pressure from the Mass. Medical Society—which urged the MGH to provide suitable private facilities for paying patients.

As opportunities increased for hospital physicians to be more involved in scientific medicine, the social concerns of the 1900's were replaced with medical concerns.

The trustees, after almost a quarter of a century of debate, eventually built and staffed Phillips House — complete with fine china and silver service. Vogel has a wonderful eye for the puffery of this group of large, slow moving targets and for their accommodation of principle to reality. "The concept of stewardship," he writes, "could be updated to apply to science and expanded to include the service of all."

The very name "Phillips House," he points out, not only clearly indicated that the patients were *not* the recipients of charity, but also "by its connection with Phillips Exeter and Phillips Andover academies, also assured prospective patients that they were not in danger of mixing with the common classes." Desirable patients were attracted by notices sent to the better hotels in Boston and principals of private schools.

These changes, Vogel argues, reflected not a fad for the well-to-do, but a definite change in social attitudes toward hospitalization, especially among the middle and upper classes—a "changing social ecology of the city." In addition, the increasingly technical elements of medical care were usually to be found in hospitals. The human experiences of birth, sickness, and death were eased out of the household and into the institution, promoting a reductionist and mechanistic view of illness characteristic of the industrial world in which we now live.

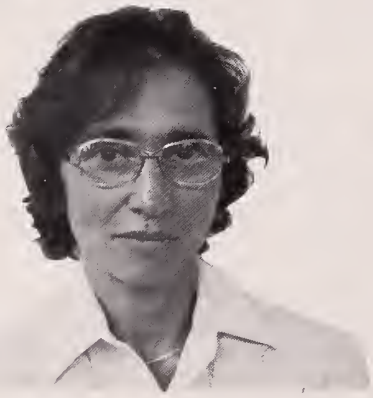
Professor Vogel's small volume is a good one, written with a lively style not always found among historians, and should be of particular interest to those with connections, past or present, to the hospitals associated with HMS, and to HMS itself. His work deserves better handling, however, than it has received from the University of Chicago Press, which produced the book with an incredible number of misspellings.

Both Vogel, and social historian Stephan Thernstrom in *The Other Bostonians,* call upon Oliver Wendell Holmes to justify encouraging their readers to extrapolate to the greater world beyond from their findings in this most parochial of American cities. Holmes sums it up rather well. To write of medicine in Boston, he felt, would be "not unlike writing of the tides in Boston Harbor. Boston is a fraction of the civilized world, as its harbor is part of the ocean. In both, we expect to find general laws and phenomena, modified more or less in their aspects by local influences." □

PULSE

ACADEMIC CAREERS OFFICE FORMED

When Liane Reif-Lehrer, Ph.D., joined the Harvard Medical School faculty in 1966, there were relatively few precedents for women in research, and only a handful of other women on the faculty. Now, in addition to her post as Associate Professor of Ophthalmology, Reif-Lehrer has been appointed Director of the recently created Office of Academic Careers at HMS, and her efforts in the new position will be directed toward removing special barriers from promotions and appointments of women and minority M.D.'s and Ph.D.'s on the Faculty of Medicine.



Reif-Lehrer

The new office was established on the recommendation of the Faculty Council, in recognition of a need to examine the external factors which may deter young scientists from undertaking academic careers. A fourteen-member committee headed by Eleanor Shore '55, Associate Dean for Faculty Affairs, conducted a six-month search for the new director. Part of Reif-Lehrer's responsibilities will be to serve as a mentor—and to find other faculty members who will also fill that role—for young research-oriented M.D.'s and Ph.D.'s in the HMS community. She will work closely with the Joint Committee on the Status of Women and the Standing Committee on Minorities. Her services will be equally accessible to men who would like help with career development.

Reif-Lehrer explains that her interest in advisory activities was awakened as a result of her experience reviewing NIH grant proposals, and occasionally helping with fundraising activities at the Eye Research Institute of Retina Foundation, where she is Senior Scientist. Last year she started "Women in Science," a networking group of M.D.'s and Ph.D.'s which meets once a month to exchange information and ideas about careers in research. She has also recently completed a handbook to help with grant proposal writing.

Reif-Lehrer's scientific research has centered on determining the role of glutamate synthetase in the retina. Glutamate, the substrate of this enzyme, is a naturally occurring amino acid which may help promote the transmission of information between cells.

'LEADERS' MARKS EIGHTH YEAR

Six prominent physicians have been singled out for special recognition in the 1981-82 film and discussion series *Leaders in American Medicine.* Conceived and established by the late George E. Gifford, Jr., in 1974, and now under the stewardship of his wife, Laura, the program this year examines the lives and contributions of Eugene A. Stead, Paul B. Beeson, Erich Lindemann, John Z. Bowers, A. McGehee Harvey, and Jacques Genest. All sessions, except for the one on Thursday, February 18, are scheduled for Wednesday afternoons at 4:30 in the Countway Library.

The medical historian and scholar **John Z. Bowers** will be featured on February 18. Professor Emeritus of the Josiah Macy, Jr., Foundation, Dr. Bowers was president of the honorary medical society Alpha Omega Alpha for many years and in this capacity profoundly influenced the course of medical education and research. He has also written extensively on medical education in China and Japan, including historical monographs entitled, *Western Medical Pioneers in Feudal Japan* and *Medical Education in Japan: From Chinese Medicine to Western Medicine.* In addition to Dr. Bowers, Robert J. Glaser, President of the Henry J. Kaiser Family Foundation and Consulting Professor of Medicine at Stanford, will be a discussant.

A. McGehee Harvey, the Eli Kennerly Marshall, Jr., Professor of Medicine Emeritus and Director of the Physiological Institute of Medicine at Johns Hopkins, will be present at the March 17 program in his honor. Best known for his expertise in differential diagnosis and his work in medical education, Dr. Harvey co-authored *Two Centuries of American Medicine,* a classic text in American medical history, with James Bordley III. Dr. Harvey is also Associate Archivist at the Johns Hopkins Medical Institutions. He will share the podium with discussant Richard J. Johns, the Massey Professor of Biomedical Engineering, and Professor of Medicine at Johns Hopkins.

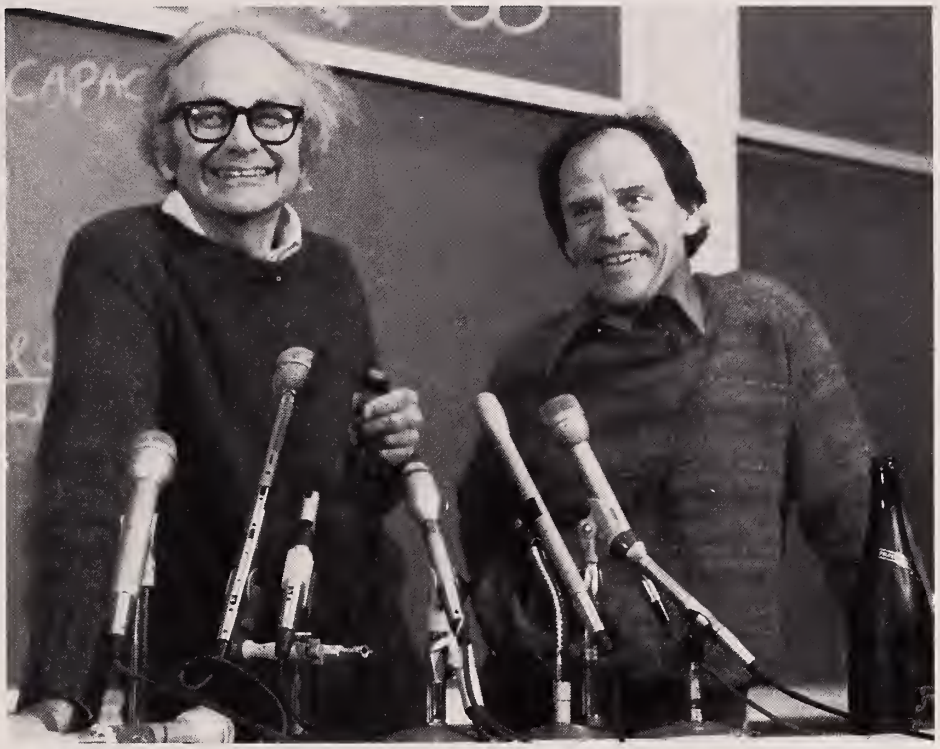
On April 21, **Jacques Genest,** Professor of Medicine at the University of Montreal and Scientific Director of the Clinical Research Institute of Montreal, will discuss his pioneering work on the relationship between hypertension and endocrine function. Other participants are Michel Chretien, Professor of Clinical Medicine at the Uni-

versity of Montreal and Director of the Laboratory of Protein and Pituitary Hormones, Clinical Research Institute of Montreal, and Gordon H. Williams, Professor of Medicine at HMS and Director of the Endocrine Hypertension Unit of the Brigham and Women's Hospital.

This year's *Leaders* series commenced on October 14 with a joint tribute to **Eugene A. Stead, Jr.,** Professor of Medicine at Duke University and Distinguished Physician of the Veterans Administration, and **Paul B. Beeson,** Professor of Medicine at the University of Washington and Distinguished Professor of the Veterans Administration. The two were honored for their work on infectious disease, as well as their involvement with medical education. Louis Dexter, Professor of Medicine Emeritus at HMS and George W. Thorn, the Hersey Professor of the Theory and Practice of Physic Emeritus and the Samuel A. Levine Professor of Medicine Emeritus at HMS, were discussants.

The late **Erich Lindemann,** Professor Emeritus at HMS, was the subject of the November 18 program. Considered by many to have been the "Father of Community Psychiatry," Dr. Lindemann was a pioneer in efforts to study external stress on the patient and to treat the individual in the context of his total environment—all with an eye to prevention. He is also remembered for his study of emotional trauma and grief suffered by the survivors of the Cocoanut Grove nightclub fire in 1942, which claimed nearly half of the 1,000 patrons. John D. Nemiah, Professor of Psychiatry at HMS and Psychiatrist-in-Chief at the Beth Israel Hospital, and David G. Satin, Assistant Clinical Professor of Psychiatry at HMS and Associate Director of the Geriatrics Program, Erich Lindemann Mental Health Center, were discussants.

Leaders in American Medicine is sponsored by the Boston University School of Medicine, Benjamin Waterhouse Medical History Society, Boston Medical Library, Brown University Program in Medicine, Harvard Medical School, and Tufts University School of Medicine. The series is made possible by a grant from the Josiah Macy, Jr., Foundation through the Boston Medical Library. Each session fulfills the requirements for 1½ hours of Category I CME credit from the Boston University School of Medicine.



By now somewhat of an institution at HMS, the David Hubel-Torsten Wiesel partnership received international acclaim when the two neurobiologists were awarded the 1981 Nobel Prize for Medicine or Physiology. Cited for their research on how the brain processes visual information, Hubel and Wiesel —whose collaboration spans more than two decades—shared the prize with Roger Sperry of the California Institute of Technology. After the announcement was made on the morning of October 9, the prize-winners met the press and celebrated with champagne.

HMS FRESHMEN: A CLASS ACT

Of the various ways in which admissions statistics can be interpreted, the least debatable is that competition is fierce: this year's freshman class of 166 was selected from an applicant pool of 3924. The other numbers which define the class of 1985 may lead to less obvious, even surprising conclusions; at any rate, they yield the following highlights:

Ages range from 18 to 31, with the bulk of the class falling between 20 and 22. More women are matriculating this year than ever before, 61 to last year's 44; the previous high was 59 in 1975. There are 27 minority students, 6 faculty offspring, and 8 alumni offspring. MCAT scores were high, as usual: the average of those accepted was 11.22 compared to 9.56 for the total applicant pool.

Seventy-nine percent of all applicants majored in the biological and/or physical sciences, with the same percentage admitted. Humanities majors—including those with double concentrations—fared well, representing 11.4 percent of the class and only 8.9 percent of those who applied.

Harvard/Radcliffe is still far in the lead as a source of matriculants (28), but Yale, with 14, is gaining on last year's ratio, which was 37 to 10. Stanford is next, with 8, and Brown and Princeton follow close behind with 7 each. Also high on the list are Duke, UC Berkeley, and Columbia/Barnard. U. Texas at Austin is perhaps the biggest surprise, represented by 4 students despite a history of only 2 HMS acceptances since 1975. UC Davis and Fordham, each supplying 3 graduates, offer almost equal surprises, UC Davis having scored only 2 acceptances since 1975, and Fordham with a history since 1975 of only 5 HMS matriculants—all in 1976. The biggest drop in numbers next to Harvard/Radcliffe was suffered by MIT, from 11 last year to 3 this year.

PHOTOGRAPH BY JOE WRINN

THE CLASS OF 1985

Adell, Alvin
New York, N.Y. (Cornell)

Asp, Jonathan P.
Roseville, Minn. (Gustavus Adolphus College)

Avery, Robin K.
Pittsburgh, Penn. (Harvard)

Aviles, Louis
Bronx, N.Y. (Lehman College, City U. of N.Y.)

Barboriak, Daniel P.
Wood, Wis. (U. of Wis., Madison)

Bardenshteyn, Elena H.
Lynn, Mass. (Harvard)

Barker, Frederick G.
Haverford, Penn. (Yale)

Barth, Richard J.
Smithtown, N.Y. (Princeton)

Beddoe, Jeanne C.
Massena, N.Y. (U. of Rochester)

Benacquista, Teresa
Floral Park, N.Y. (Queens College)

Benaron, David A.
Saratoga, Calif. (UC Davis)

Benson, David C.
Woodland Hills, Calif. (UCLA)

Benson, Jeffrey A.
Montreal, Quebec (Harvard)

Bentley, Rex C.
Lakeland, Fla. (Harvard)

Berger, Ronald D.
White Plains, N.Y. (MIT)

Bernstein, Paul S.
Minneapolis, Minn. (Harvard)

Betteridge, David R.
Short Hills, N.J. (Harvard)

Block, Bethany R.
Old Chatham, N.Y. (Amherst)

Blood, Patricia L.
Tacoma, Wash. (U. of Wash.)

Bloom, Claire
Grosse Pointe Park, Mich. (Brown)

Bonanno, Jay B.
Tenafly, N.J. (Amherst)

Boyer, Leslie V.
Tucson, Ariz. (U. of Ariz.)

Bradley, Scott M.
McLean, Va. (Harvard)

Broussal, Lauren L.
Sebastopol, Calif. (UC Berkeley)

Brown, Nancy L.
Bryan, Ohio (Columbia)

Bryant, Paulette C.
Hampton, Va. (Hampton Inst.)

Bueno, Raphael
Jericho, N.Y. (Harvard.)

Camazine, Brian M.
Poway, Calif. (Harvard)

Chaikind, Janet L.
Houston, Texas (U. of Texas)

Chan, Teresa W.
West Allis, Wis. (Harvard)

Chodosh, Lewis A.
Wayland, Mass. (Yale)

Clark, Duncan B.
Syracuse, N.Y. (U. of Rochester)

Cotran, Paul R.
Lexington, Mass. (Harvard)

Dank, Joan R.
Wyncote, Penn. (Yale)

Davids, Jon R.
Miami, Fla. (Brown)

Delgadillo, Michaele M.
Dallas, Texas (Southern Methodist U.)

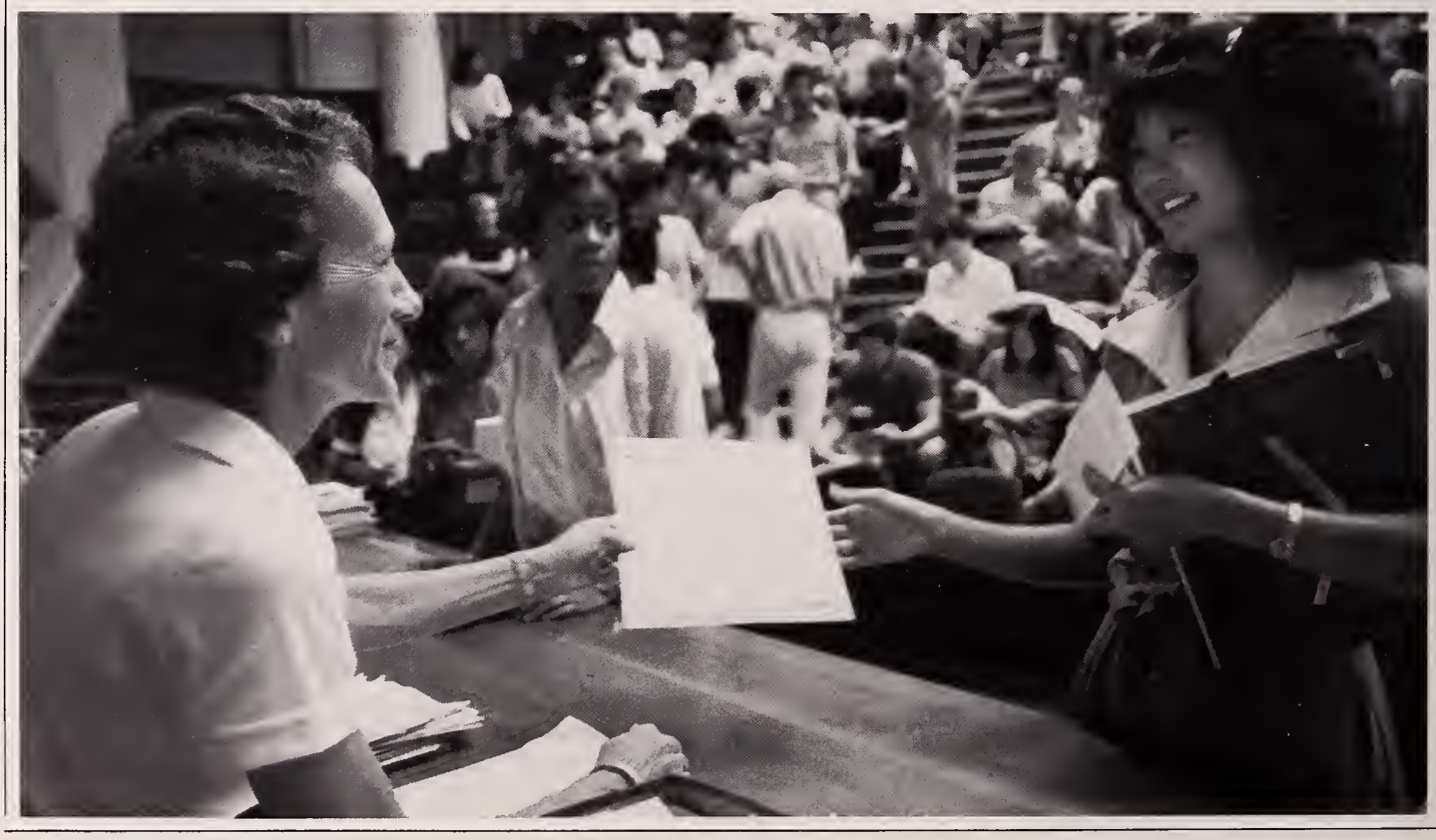
Demlow, Lori L.
Birmingham. Mich. (Wesleyan U.)

Denlinger, Steven L.
East Petersburg, Penn. (Goshen College)

Dilley, Sharon P.
Sugar Grove, N.C. (U. of N.C.)

Dressler, Kenneth A.
Hudson, Quebec (Brandeis)

Duarte, David A.
Carson, Calif. (USC)



PHOTOGRAPH BY JERRY BERNDT

Dunnett, Cheryl L.
Long Beach, Calif. (UC San Diego)

Ehrlich, Amy R.
Newton, Mass. (Harvard)

Emanuel, Ezekiel J.
Wilmette, Ill. (Amherst)

Falo, Louis D., Jr.
Greensburg, Penn. (U. of Pittsburgh)

Fenwick, Jeffrey R.
Davis, Calif. (UC Davis)

Fisher, Adrian A.
Kalispell, Mont. (Stanford)

Fitzpatrick, Karen
Montgomery, Ala. (Harvard)

Fletcher, William O., Jr.
Genoa City, Wis. (Valparaiso U.)

Flores, Eduardo D.
Edinburg, Texas (U. of Texas)

Flores, Robert A.
Brooklyn, N.Y. (Columbia)

Foley, Eugene F., III
Jamestown, N.Y. (Williams)

Freedman, Neil J.
Wyncote, Penn. (Brown)

Freese, Andrew
Bethesda, Md. (Harvard)

Fridovich, Sharon E.
Durham, N.C. (Duke)

Friedberg, Joseph S.
Allentown, Penn. (U. of Penn.)

Frim, David M.
Newton Center, Mass. (Harvard)

Gagliano, Nancy J.
Greenlawn, N.Y. (Union College)

Gall, Clifford M.
Lewisville, Texas (U. of Penn.)

Green, David C.
Hickory Corners, Mich. (U. of Chicago)

Grosso, Sue Jane
Brooklyn, N.Y. (NYU)

Gupta, Geeta K.
Downey, Calif. (USC)

Guyton, James L.
Jackson, Miss. (U. of Miss.)

Hemsley, Stanley E., Jr.
New Bedford, Mass. (Bates)

Hernandez, Cristela
Edinburg, Texas (Yale)

Holberg, Astrid E.
Pacific Palisades, Calif. (UC San Diego)

Howard, Frank D., IV
Takoma Park, Md. (Walla Walla College)

Howard, Mark W.
Napa, Calif. (UC Berkeley)

Hughes, Marlon D.
Manteca, Calif. (NW Nazarene College)

Hunt, Helen M.
Cambridge, Mass. (Yale)

Imanishi, Yuri
Tokyo, Japan (Wellesley)

Inzucchi, Silvio E.
Bronx, N.Y. (Fordham U.)

Ivarsson, Bengt L.
Riverside, Conn. (MIT)

Johnson, Lynt B.
Savannah, Ga. (Duke)

Jones, Sandra J.
Atlanta, Ga. (Duke)

Joseph, David M.
Chicago, Ill. (MIT)

Kaplan, Richard Z.
Waldwick, N.J. (U. of Penn.)

Kersh, Robert A.
New York, N.Y. (Stanford)

Kim, Kenneth T.
Clayton, Mo. (Harvard)

Kirven, Lisa D.
Bronx, N.Y. (Lehman College, City U. of N.Y.)

Klickstein, Lloyd B.
Mount Pleasant, Minn. (Tufts)

Komives, Eugenie M.
Meguon, Wis. (U. Of Wis.)

Koren, Michael J.
Staten Island, N.Y. (Brandeis)

Kost, Rhonda G.
Holliston, Mass. (Yale)

Krumholz, Harlan M.
Dayton, Ohio (Yale)

Kusner, David J.
Maple Heights, Ohio (John Carroll U.)

Landzberg, Michael J.
Whitestone, N.Y. (Columbia)

Lane, Philip K.
Los Angeles, Calif. (Stanford)

Lee, Kihan
Los Altos Hills, Calif. (Stanford)

Leifer, Dana
New York, N.Y. (Harvard)

Lejeune, Simon M. W.
McLean, Va. (Yale)

Liacouras, Chris A.
West Chester, Penn. (Johns Hopkins)

Lindsay, Jeff D.
Beeville, Texas (U. of Texas)

Lo, Kwok Ming S.
Lakewood, N.J. (Harvard)

Lobel, Susan M.
Huntingdon Valley, Penn. (Princeton)

Loh, Evan
Orange, Conn. (Harvard)

Mannick, Joan B.
Weston, Mass. (Harvard)

Matthews, Jeffrey B.
Columbus, Ohio (Harvard)

McMahon, Mark S.
Jericho, N.Y. (Georgetown)

Miller, Jeffrey W.
St. Petersburg, Fla. (U. of Mich.)

Mills, L. Kendrick
Owensboro, Ky. (Duke)

Milrod, Lewis M.
Merrick, N.Y. (Vanderbilt U.)

Mirabello, Steven C.
Brooklyn, N.Y. (Columbia)

Monaco, Anthony P.
Wilmington, Del. (Princeton)

Monitto, Constance L.
East Northport, N.Y. (Princeton)

Montgomery, Roger C.
Muskogee, Okla. (Northeastern State U.)

Moore, James R.
Grosse Pointe Woods, Mich. (Manhattan College)

Morales, Alvin
Juncos, Puerto Rico (Cornell)

Murphy, Edward G.
Cohoes, N.Y. (State U. of N.Y. at Albany)

Myers, Michael T.
Kansas City, Mo. (Johns Hopkins)

Neilly, Sarah A.
Weston, Conn. (Trinity College)

Nuchtern, Jed G.
Boston, Mass. (Princeton)

Oates, Dale C.
Jacksonville, Fla. (Fla. Atlantic U.)

O'Keefe, Regis J.
Pittsburgh, Penn. (Yale)

Orlando, Fred
Flushing, N.Y. (Fordham)

Ortega, Adrian E.
Monterey Park, Calif. (Stanford)

Ortiz, Orlando
Bronx, N.Y. (Columbia)

O'Shea, Patricia M.
Yorktown Heights, N.Y. (Mount

Holyoke)

Petri, Elizabeth S.
McLean, Va. (Yale)

Pollack, Michael A.
Westfield, N.J. (Harvard)

Potts, Earl, Jr.
Chicago, Ill. (Harvard)

Poyourow, Patricia L.
San Diego, Calif. (UC Berkeley)

Ridker, Paul M.
Bethesda, Md. (Brown)

Rivas, Jose R.
Falfurrias, Texas (U. Of Texas, Austin)

Roberts, Drucilla J.
Northridge, Calif. (UCLA)

Robertson, Gregory A.
Dallas, Texas (Colorado College)

Rosa, Daniel
Bronx, N.Y. (Fordham)

Rosenthal, Elisabeth L.
New York, N.Y. (Stanford)

Salerno, Judith A.
Newark, N.J. (Stonehill College)

Sanghvi, Suketu S.
Novi, Mich. (Harvard)

Schaffer, Patricia L.
Charlotte, N.C. (Duke)

Schulte, Robert D.
Bedford, Mass. (Tufts)

Schwarzschild, Michael
Cherry Hill, N.J. (Princeton)

Selden, Richard F.
Huntington Station, N.Y. (Harvard)

Show, Joyce
Los Angeles, Calif. (Harvard)

Shunatona, Baptiste B., III
Ada, Okla. (Rice U.)

Sillman, Jonathon S.
Bloomfield Hills, Mich. (Stanford)

Smith, Maury D.
Montgomery, Ala. (U. of Ala.)

Smythe, Scott B.
Southfield, Mich. (Albion College)

Spitzer, Sheryl K.
St. Louis, Mo. (U. of Mich.)

Starace, Linda A.
Long Island City, N.Y. (Queens College)

Steichen, John D.
Beverly Hills, Calif. (UC Davis)

Stewart, Elizabeth A.
Lookout Mountain, Tenn. (Vanderbilt U.)

Stuart, Regina K.
Roselle Park, N.J. (Harvard)

Suits, Elizabeth A.
Storrs, Conn. (Yale)

Swanson, Scott J.
Winchester, Mass. (Amherst)

Tager, Andrew M.
Tenafly, N.J. (Brown)

Torrey, William C.
Putney, Vt. (Dartmouth)

Triedman, John K.
Providence, R.I. (Harvard)

Tsang, So-Fai
Bronx, N.Y. (Princeton)

Umpierre, Sharee A.
Santurce, Puerto Rico (Cornell)

Unger, Paul S.
Larchmont, N.Y. (Wesleyan U.)

Van Wesep, Robert A.
Baltimore, Md. (Stanford)

Vierra, Mark A.
Los Banos, Calif. (UC San Diego)

Waldmann, Richard A.
Silver Spring, Md. (Brown)

Waldstreicher, Joanne
Rockaway Park, N.Y. (Brooklyn College, City U. of N.Y.)

Welch, Melissa
Chula Vista, Calif. (UC Irvine)

Welsh, Kathleen M.
Bayside, Calif. (UC Berkeley)

Wiggs, Janey L.
Washington, D.C. (UC Berkeley)

Wintermeyer, Stephen F.
Pocasset, Mass. (Yale)

Woo, Barbara J.
Lincoln, Mass. (Yale)

Wright, Ellen E.
Houston, Texas (Duke)

Wurtz, Rebecca M.
Prospect Heights, Ill. (Yale)

Yolles, Jennifer C.
Stony Brook, N.Y. (Brown)

Young, Terri L.
Detroit, Mich. (Bowdoin)

Zucker, Stephen D.
Malvern, Penn. (Swarthmore)

Zweizig, Susan L.
Los Angeles, Calif. (UC Berkeley)

PROMOTIONS

PROFESSOR

Christos A. Athanasoulis: radiology at the Massachusetts General Hospital (MGH)

John R. Brooks: Frank Sawyer Professor of Surgery at the Brigham and Women's Hospital (B&WH)

George H. Clowes, Jr.: surgery at the New England Deaconess Hospital (NEDH)

Lawrence H. Cohn: surgery at the B&WH

Franklin H. Epstein: William Applebaum Professor of Medicine

Joseph T. Ferrucci: radiology at the MGH

Fred H. Frankel: psychiatry at the Beth Israel Hospital (BIH)

Ruben F. Gittes: Elliott Carr Cutler Professor of Surgery

Gerald L. Klerman: psychiatry

Alexander Leaf: Ridley Watts Professor of Preventive Medicine; Professor of Medicine

David C. Levin: radiology at the B&WH

Robert C. Moellering: Shields Warren-Mallinckrodt Professor of Clinical Research at the NEDH

John T. Potts: Jackson Professor of Clinical Medicine

Julius B. Richmond: health policy

Jeremiah E. Silbert: medicine at the B&WH

Gordon H. Williams: medicine at the B&WH

CLINICAL PROFESSOR

Franklin H. Ellis, Jr.: surgery

Walter S. Kerr, Jr.: surgery

Melvin P. Osborne: surgery

Melvin L. Taymor: obstetrics and gynecology

Chiu-An Wang: surgery

ASSISTANT PROFESSOR

Marian DiFiglia: anatomy

Marvin R. Garovoy: medicine at the B&WH

Mark J. Mills: psychiatry at the Massachusetts Mental Health Center

Stephen A. Raymond: anaesthesia

ASSISTANT CLINICAL PROFESSOR

Andrew D. Guthrie, Jr.: pediatrics

APPOINTMENTS

ASSISTANT PROFESSOR

Charles T. Burt: radiology

Leonidas A. Harisiadis: radiation therapy at the MGH

Vicki E. Kelley: medicine (pathology)

Susan E. Rittenhouse: medicine

Ramana V. Tantravahi: medicine

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STUDENT FORUM

The Not Quite Doctor

BY EMILY FRIEDAN '82

In September, 1980, Emily Friedan '82 began a two-month preceptorship sponsored by the American Medical Students Association at the Hope Medical Center, a National Health Service Corps clinic in Estancia, New Mexico. It was a good match. As October drew to a close, Friedan was reluctant to leave, and the clinic staff was equally disinclined to relinquish her. At the medical center's expense, she stayed on until March. Here she describes how a half year away from academic medicine has affected her.

When I first came to Estancia, New Mexico, all I knew of my new surroundings was the voice of the doctor on the telephone and the name of the clinic I would work in. Hope Medical Center is a small, fee-for-service clinic serving a county of 8,000. It has one physician, one dentist, and a supporting staff of five. Under a preceptorship from the American Medical Students Association (AMSA), I joined the Center as a fourth-year student supervised by a physician with whom I shared the job of seeing patients. In addition, I helped with lab work, X-rays, filing, and answering the phone. Mine was a special role of "Not Quite Doctor," which enabled me to be both one of the staff and one of the physicians, and to bridge the gaps in-between. It was truly an apprenticeship through which I consolidated the skills I had and developed many new ones.

At Harvard's teaching hospitals I had seen many cases of hypertension, heart failure, diabetes, pyelonephritis, pneumonia, and depression when they had reached the point of hospitalization, but knew nothing of the primary care that prevented such disorders or maintained them on an outpatient basis. I chose to leave medical school for a year's respite from the urban Northeast and from hospital medicine because my studies seemed to point no

ILLUSTRATION BY ALEXA GRACE

further than internship. At the Hope Medical Center I was searching for a different style or concept of medical care in which I could glimpse a more meaningful future.

While most hospital patients come in with a diagnosis or at least an evaluation, in a small rural clinic the patients are medical "black boxes": in each new case the clinician starts from scratch. At the Hope Medical Center I saw numerous sore throats, a good deal of depression, and much hypertension, but I found that each individual was unique and interesting. There were frequent diagnostic puzzles and a wide variety of medical problems. Those back home who had told me that general practice was boring were repeatedly proven wrong during my months in Estancia.

Being the only provider in the community, one sees patterns of disease that might need extensive statistical analysis in a larger setting. We identified the Influenza A epidemic two weeks before it appeared in the medical literature, as well as streptococcal pharyngitis (endemic to New Mexico) and rarer processes. In a three-week period we encountered about twenty patients (each under 24 years of age) with a *bullous otitis,* and provided the state epidemiologist with paired sera for identification of the agent. Had we the time or capacity, it would have been fairly easy to describe the epidemiology. While I had learned smatterings of epidemiology in school, I had never before seen it in action. And being able to recognize the miniepidemics of viral URI's or gastroenterides remarkably facilitated treatment of patients.

I had also been told that being a generalist and a good clinician were mutually exclusive—that there is just too much knowledge for one person to assimilate. Intuitively I had known this could not be true. Through my experience I came to realize that this myth is based on the false premise that *all* knowledge is necessary to make a good clinician. While it would be impossible to keep up with the latest developments in every field, it is not difficult to keep up with the developments around primary care problems which encompass every field.

Seeing cooperative medicine at its best was one of the most rewarding aspects of my apprenticeship. Because we had an excellent relationship with a network of specialists in Albuquerque, fifty-five miles away, we could refer our patients with confidence; or, if we were baffled about a case, we could pick up the phone and capitalize on their expertise. There was no evidence here of a phenomenon I had observed in medical school, namely, the reluctance to ask questions for fear of admitting ignorance.

The referral network also increased my confidence in the quality of medical care we were giving. The immediate feedback from these other physicians was both instructive and supportive. With it came the insight that medicine is not as complicated, mysterious, or inaccessible as the image maintains. Rather, I found that it is more often common sense on top of a foundation of basic knowledge— *enough* knowledge. I realized this held true for our

referral physicians as well as for ourselves; they followed the same principles, adding only the details of their more specialized knowledge.

We were warned in school about the notorious LMD (Local Medical Doctor), whose archaic or substandard care gave delivery settings such as this one a bad name. In Estancia I discovered that this reputation was largely undeserved. I did witness instances of poor medicine, notably one practitioner who refused to adapt to modern (and not-so-modern) methods of diagnosis and management. This showed me the source of my teachers' prejudices; but it was a single departure from the otherwise high quality of care.

The greatest joy of my apprenticeship came from my relationship with my patients. Gradually, I got to know whole families as each member came in for medical attention, and I could follow up on certain patients when they returned to accompany a relative. One experience I remember most vividly. An elderly woman with several chronic medical problems came in regularly with her daughter-in-law. Some time later, the daughter-in-law brought her own daughter with a minor illness. That visit became an opportunity for them to discuss their feelings of guilt about putting the elderly woman in a nursing home. Had the pediatric visit not occurred, I suspect there may have been no discussion of these difficulties (with which, I believe, we were able to help).

My experience—in contrast to the single month of most medical school rotations—showed me what it really meant to follow a patient. Furthermore, in this small rural setting, my patients and I were members of the same community. I would often follow up cases in the supermarket, the drugstore, or the bar. I would get big "hello's" from the children (though some of the younger ones would run away when they recognized me).

Seeing individuals performing their various roles in the community, I was able to view them as much more than just patients; and I found that the elimination of stringent doctor-patient distinctions, for the most part, enhanced rather than detracted from the relationship. (This *can* have its difficulties, however, mostly in the context of psychological counseling. It was difficult for me to have a therapy session with someone who I knew might wait on me in the local restaurant an hour later.)

There can also be drawbacks to being The Doctor for a small community. In the supermarket, the drugstore, and the bar you are always The Doctor—subject to an infinite variety of on-the-spot consultations. As I was not *The* Doctor, I was not always having to fend off such consultations; but when such situations arose, I usually enjoyed them, only rarely resenting the intrusion. Although my unique role of the Not Quite Doctor afforded me a certain freedom in my behavior, I sometimes felt I was partying too hard in public, and often wondered who was watching me. (Now, months later, I remain confused about the necessity of The Doctor to project an image of the upright, infallible citizen.)

Being the only provider in a community, one sees patterns of disease that might need extensive statistical analysis in a larger setting.

My six months in New Mexico—also unlike most medical school rotations—allowed me to be part of a working team for longer than it took to learn everyone's name. The supporting staff—office manager, business manager, medical assistant, dental assistant, and office clerk—all welcomed me into a cooperative operation. The staff also paid me the compliment of asking me to check them and their families, thus bolstering my confidence as a potential clinician.

Despite a pervading mutual respect, there was a fairly classic separation between professional and non-professional staff. While roles were usually sharply defined, there was also considerable overlap when needed: thus, in an emergency, the business manager could be found bandaging a burn victim while I started an IV. I often acted in both professional and non-professional capacities and often as a go-between, for example, interrupting the physician and dentist in private conversation when several patients were waiting to be seen. My uniquely undefined role and, I think, my being a woman, allowed me to straddle both echelons fairly comfortably. In this setting I experienced the best of both worlds, but I continue to wonder if it isn't possible for The Doctor to function on the same hierarchical level as his or her staff.

Thanks to the staff's willingness to share knowledge and responsibilities, I learned much about the logistics of practice management. The amount of time and energy that goes into collecting fees from Medicare, Medicaid, insurance companies, and private parties is mind-boggling. In this clinic, everyone is salaried—the doctors by the National Health Service Corps and the staff by the Center. I discovered that I was torn between sparing my patients large expenses and helping the clinic show a profit. (All profits go back into the clinic.) I became more aware of my own behavior with respect to the financial aspects of the practice —checking off a more expensive visit, for instance, if I gave the patient a prescription. After all, how could I charge people if they didn't leave with something tangible, like a drug? This, in turn, made me examine my own dependence on writing prescriptions. I also found myself making the classic mistake of not caring how much was charged if a Medicare or Medicaid form was on the chart.

What made this experience so valuable and unique in my training? For one thing, I had time enough to develop medical competence and a place in a community, and more time to enjoy both. I was away from the academic environment with its preconceived notions of students, constant evaluation, and competition. Most important was this place—the Hope Medical Center, its staff, and the community it serves. In this setting emerged a love of medicine and an enthusiasm for learning that had been untapped in three years of medical school.

In addition to practicing medicine I harvested hay, picked and cleaned pinto beans, dug cars out of mountain mud, learned to use a rifle, and developed an appreciation for Coors. The people I met were neither the rednecks I expected nor the academics I was accustomed to; they were warm, sensitive, intelligent individuals who welcomed me into their community.

My questions upon leaving the East were numerous, and I found many answers in Estancia, New Mexico. I came for two months, stayed for six, and will probably go back again. □

H.M.S. 200

Premedical Education: The Kindling of Change

BY LISA W. DREW

Premedical education first became a hot topic in the late 1800's. It was then the fashion to write pamphlets expressing one's views on current issues, and just about everyone who had anything to do with medicine had a field day writing about medical education. There began a slow and painful erosion of tradition: the three-year course of study at Harvard and other medical schools was changed to four years, and attention gradually turned to admission requirements. Debates were charged with opinions about premedical education—ranging from a reluctance to require any education at all to a firm recommendation from President Eliot of Harvard that would-be M.D.'s begin to prepare for their careers at the tender age of six.

The following collection of quotations chronicles those years of change:

1869

Although the training preliminary to a professional education has been the subject of much discussion, I cannot forbear repeating the frequent expression of regret that a certain degree of familiarity with Chemistry, especially, and with some of the departments of Physics and Natural History, sufficient to make their lessons of applied logic practically useful, is not more generally obtained before entering the Medical School.

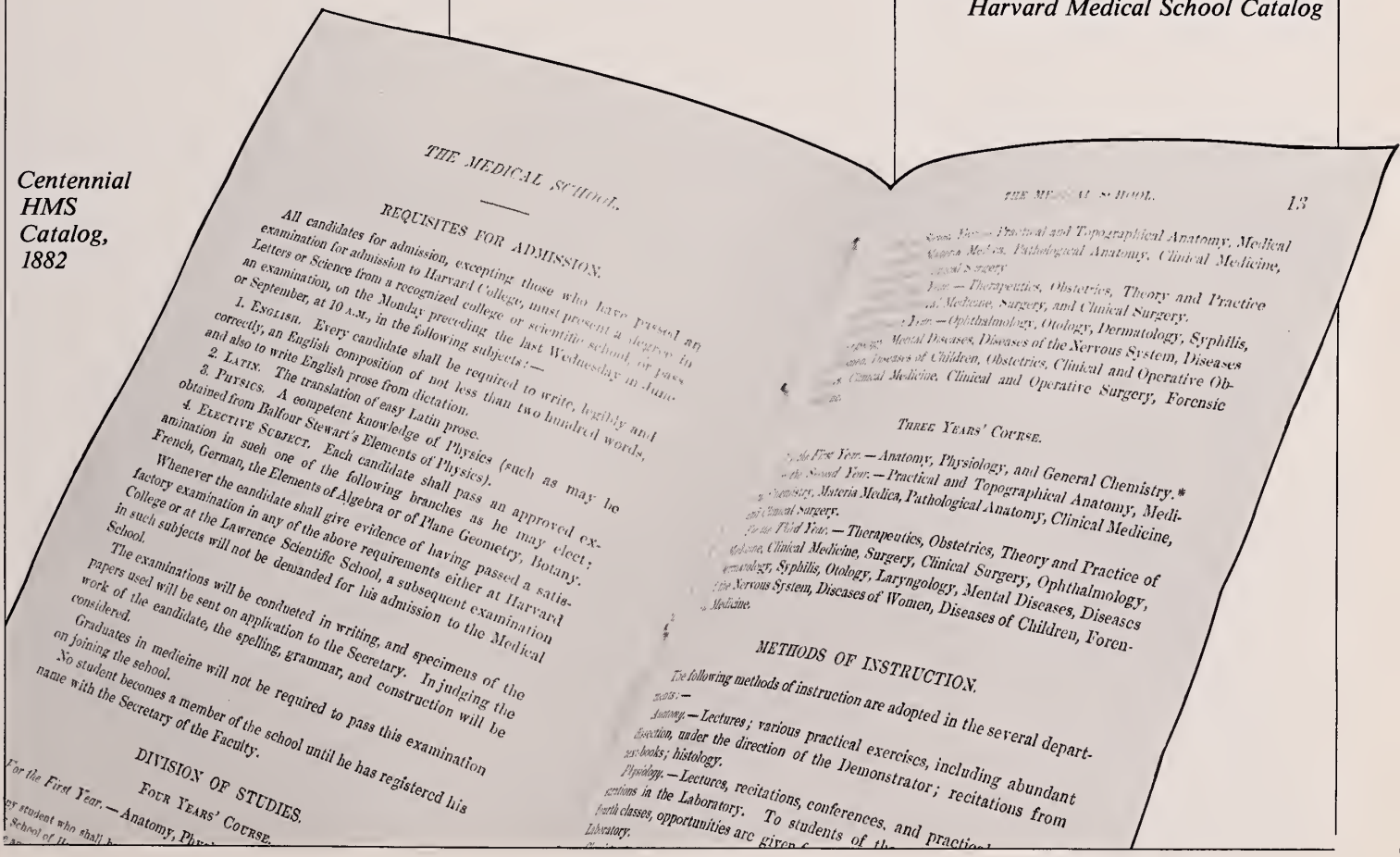
Richard Manning Hodges, M.D.
Professor of Surgery, HMS

1873

Students who wish to join the school must enter their names with the Dean of the Faculty.

College students intending to study medicine are advised to pay special attention to the study of Natural History, Chemistry, Physics, and the French and German languages, while in College.

Harvard Medical School Catalog



THE MEDICAL SCHOOL.

REQUISITES FOR ADMISSION.

All candidates for admission, excepting those who have passed an examination for admission to Harvard College, must present a degree in Letters or Science from a recognized college or scientific school, or pass an examination, on the Monday preceding the last Wednesday in June or September, at 10 A.M., in the following subjects:—

1. ENGLISH. Every candidate shall be required to write, legibly and correctly, an English composition of not less than two hundred words, and also to write English prose from dictation.
2. LATIN. The translation of easy Latin prose.
3. PHYSICS. A competent knowledge of Physics (such as may be obtained from Balfour Stewart's Elements of Physics).
4. ELECTIVE SUBJECT. Each candidate shall pass an approved examination in such one of the following branches as he may elect; French, German, the Elements of Algebra or of Plane Geometry, Botany.

Whenever the candidate shall give evidence of having passed a satisfactory examination in any of the above requirements either at Harvard College or at the Lawrence Scientific School, a subsequent examination in such subjects will not be demanded for his admission to the Medical School.

The examinations will be conducted in writing, and specimens of the papers used will be sent on application to the Secretary. In judging the work of the candidate, the spelling, grammar, and construction will be considered.

Graduates in medicine will not be required to pass this examination on joining the school.

No student becomes a member of the school until he has registered his name with the Secretary of the Faculty.

DIVISION OF STUDIES.

FOUR YEARS' COURSE.

For the First Year. — Anatomy, Physiology, and General Chemistry.*

For the Second Year. — Practical and Topographical Anatomy, Medical Chemistry, Materia Medica, Pathological Anatomy, Clinical Medicine, and Clinical Surgery.

For the Third Year. — Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, Clinical Surgery, Ophthalmology, Dermatology, Syphilis, Otology, Laryngology, Mental Diseases, Diseases of the Nervous System, Diseases of Women, Diseases of Children, Forensic Medicine.

METHODS OF INSTRUCTION.

The following methods of instruction are adopted in the several departments:—

Anatomy. — Lectures; various practical exercises, including abundant dissection, under the direction of the Demonstrator; recitations from text-books; histology.

Physiology. — Lectures, recitations, conferences, and practical sections in the Laboratory. To students of the fourth classes, opportunities are given for ... Laboratory.

THE MEDICAL SCHOOL. 13

Second Year. — Practical and Topographical Anatomy, Medical Chemistry, Materia Medica, Pathological Anatomy, Clinical Medicine, and Clinical Surgery.

Third Year. — Therapeutics, Obstetrics, Theory and Practice of Medicine, Surgery, and Clinical Surgery.

Fourth Year. — Ophthalmology, Otology, Dermatology, Syphilis, Mental Diseases, Diseases of the Nervous System, Diseases of Children, Obstetrics, Clinical and Operative Medicine, Clinical and Operative Surgery, Forensic Medicine.

THREE YEARS' COURSE.

For the First Year. — Anatomy, Physiology, and General Chemistry.*

For the Second Year. — Practical and Topographical Anatomy, Medical Chemistry, Materia Medica, Pathological Anatomy, Clinical Medicine, and Clinical Surgery.

For the Third Year. — Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, Clinical Surgery, Ophthalmology, Dermatology, Syphilis, Otology, Laryngology, Mental Diseases, Diseases of the Nervous System, Diseases of Women, Diseases of Children, Forensic Medicine.

Centennial HMS Catalog, 1882

1875

A young man fresh from school enters his name in your office, reads a little medicine for a year, rides a little, sees some of the patients that come into your office, attends two courses of lectures, and graduates a doctor... What does the very name of *doctor* imply but that he who bears it is *learned*, and think you that one-half of these young men are in any sense learned?

Edward T. Caswell, M.D.
Providence, R.I.

In and after September, 1877, all students seeking admission to the Medical School must present a degree in Letters or Science from a recognized college or scientific school, or pass an examination in the following subjects:

1. LATIN. The translation of easy Latin prose. French or German will be accepted, however, as a substitute for Latin.

2. PHYSICS. Candidates will be required to show such a knowledge of this subject as may be obtained from Balfour Stewart's elementary works on Physics.

The examinations will be conducted in writing, and in judging the work of the candidates the spelling, grammar, and construction will be considered.

Harvard Medical School Catalog

1877

from the first sample admission exam, Harvard Medical School Catalog

PHYSICS.

1. What is the force of gravitation? The law of universal gravitation?

2. Explain the action of the syphon.

3. What is meant by wave-motion and wave-length?

4. What are the laws of reflection of sound and light?

5. Describe the thermometer. Difference between the Centigrade and Fahrenheit scales? How convert one into the other?

6. What is specific heat?

7. What is refraction of light? Illustrate by an example.

8. What is the effect of a double convex lens upon a beam of parallel rays?

9. What is magnetism?

10. What is a hydraulic press? Upon what principle does it depend?

1882

The NEED of a thorough preparation for medical men is certainly the cause for the Academy's existence ...The mission of the Academy, then, really lies in this: To convince the public that a preliminary training of the mind is absolutely necessary for the greatest efficiency of medical men.

Charles McIntire, Jr., M.D.
from a paper read before the American Academy of Medicine

1884

Pupils do not take kindly to admission examinations, and it will be more difficult to enforce them in medical colleges, because everyone has become accustomed to the unrestricted acceptance of students.

Henry Leffmann, M.D.
Philadelphia County Medical Society

Much of the discussion, as well as action in the matter of higher medical education during the next ten years will circle about the subject of the admission examination. In my own experience the best and must successful students who make the most successful physicians are those who have had the broadest preliminary education. Such an education should include the ancient and modern languages and the natural sciences, as well as physics, and all the branches of a thorough English education. But since it is impossible, at the present day, to insist upon such requirements, we should agree upon a reasonable and practicable preliminary education, which the colleges, through professional opinion, should be required to adopt.

James Tyson, M.D.
Philadelphia County Medical Society

1887

One of the chief objects of the American Academy of Medicine is "to encourage young men to pursue regular courses of study in classical and scientific institutions before entering upon the study of medicine"; in other words, we declare that a college education is a particularly desirable prelude to the pursuit of medical science...

It may be objected that it is unwise to attempt to bend a youth's thoughts in the direction of his life's work while yet he is in college; that he needs the training which shall discipline his mind in all its parts, so that it may be prepared to do any task that shall be set for it...

Every one of us would deplore a preparatory education which would make a man one-sided in any respect. We all recognize the necessity of the humanities as well as of the sciences; and no education can be regarded as liberal which omits either of them...

Immediately suggested by these rhetorical exercises, because inseparably associated with most of them, is the matter of penmanship. It is not necessary that a physician should perform like a professor of calligraphy; but he ought, at least, to write with absolute distinctness. A short time ago there appeared in a prominent medical weekly a paper on abdominal section, and in it occurred this remarkable statement: "In Battey's operation the brains are removed; in Tait's the brains and the tubes." Who can blame the compositor for a mistake in a report so badly penned that "ovaries"

looked like "brains"; and who would waste sympathy on an author who took so little care to make his manuscript legible?...

The vocabulary of some medical students is so limited that they not only cannot give intelligible utterance to their own thoughts, but cannot comprehend much of what is spoken to them in the lectures of their professors. How preposterous it is that such men should receive any encouragement to enter upon the study of medicine!

Fredric Gerrish, M.D.
Chairman of the American Academy of Medicine Committee on Premedical Education

1890

The consequences of insufficient preliminary training are fatal in many ways to personal advancement in medical science. There is need of the propelling power from the best intellect in every medical man.

The medical student of to-day contemplates a different work in a better environment than once obtained. The old rubbish is cleared away, and clean, tangible work appears, with all its brilliancy, from the deep chaos of primal darkness. The medical profession of to-day wants only men of discipline, of courage and of culture. The best minds in the community—the best men of society.

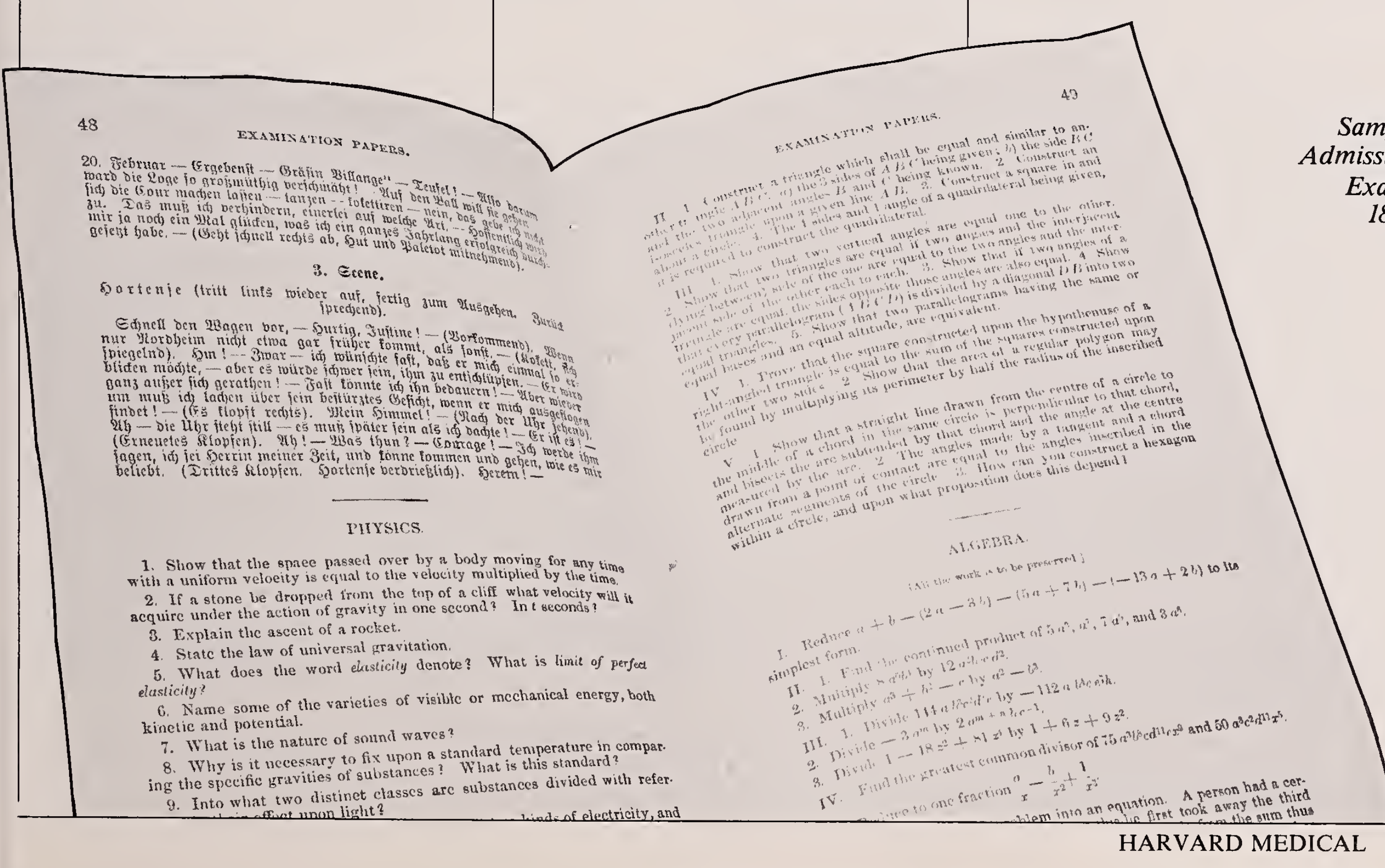
David Dana Spear, M.D.
Maine Medical Association

1891

It appears that the average age of the graduate of Harvard College is 23 years and over. A careful examination of the work of the preparatory schools will, I think, satisfy any candid observer that a wholly unnecessary waste of time goes on there—and that a young man may be properly prepared for admission to college at 18 years or less, without dangerous overpressure.

H.P. Walcott, M.D.
honorary member of the HMS Association

Men pursuing the double course, as it is best they should do, are 26 years old on the average when they receive their diploma of M.D. They are at least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EXAMINATION PAPERS.

20. Februar — Ergebenst — Gräfin Villange" — Teufel! — Also darum ward die Loge so großmüthig verschmäht! Auf den Ball will sie gehen, sich die Cour machen lassen — tanzen — kokettiren — nein, das gebe ich nicht zu. Das muß ich verhindern, einerlei auf welche Art. — Hoffentlich wird mir ja noch ein Mal glücken, was ich ein ganzes Jahrlang erfolgreich durchgesetzt habe. — (Geht schnell rechts ab, Hut und Paletot mitnehmend).

3. Scene.

Hortense (tritt links wieder auf, fertig zum Ausgehen. Zurück sprechend).

Schnell den Wagen vor, — Hurtig, Justine! — (Vorkommend). Wenn nur Nordheim nicht etwa gar früher kommt, als sonst. — (Kokett, sich spiegelnd). Hm! — Zwar — ich wünschte fast, daß er mich einmal so erblicken möchte, — aber es würde schwer sein, ihm zu entschlüpfen. — Er wird ganz außer sich gerathen! — Fast könnte ich ihn bedauern! — Aber wiederum muß ich lachen über sein bestürztes Gesicht, wenn er mich ausgeflogen findet! — (Es klopft rechts). Mein Himmel! — (Nach der Uhr sehend). Ah — die Uhr steht still — es muß später sein als ich dachte! — Er ist es! — sagen, ich sei Herrin meiner Zeit, und könne kommen und gehen, wie es mir beliebt. (Drittes Klopfen. Hortense verdrießlich). Herein! —

PHYSICS.

1. Show that the space passed over by a body moving for any time with a uniform velocity is equal to the velocity multiplied by the time.
2. If a stone be dropped from the top of a cliff what velocity will it acquire under the action of gravity in one second? In t seconds?
3. Explain the ascent of a rocket.
4. State the law of universal gravitation.
5. What does the word *elasticity* denote? What is *limit of perfect elasticity*?
6. Name some of the varieties of visible or mechanical energy, both kinetic and potential.
7. What is the nature of sound waves?
8. Why is it necessary to fix upon a standard temperature in comparing the specific gravities of substances? What is this standard?
9. Into what two distinct classes are substances divided with reference to their effect upon light?

... kinds of electricity, and

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EXAMINATION PAPERS.

II 1 Construct a triangle which shall be equal and similar to another triangle ABC, a) the 3 sides of ABC being given; b) the side BC and the two adjacent angles B and C being known. 2 Construct an isosceles triangle upon a given line AB. 3. Construct a square in and about a circle. 4. The 4 sides and 1 angle of a quadrilateral being given, it is required to construct the quadrilateral.

III 1. Show that two vertical angles are equal one to the other. 2 Show that two triangles are equal if two angles and the interjacent side of the one are equal to the two angles and the interjacent side of the other each to each. 3. Show that if two angles of a triangle are equal, the sides opposite those angles are also equal. 4 Show that every parallelogram ($ABCD$) is divided by a diagonal DB into two equal triangles. 5. Show that two parallelograms having the same or equal bases and an equal altitude, are equivalent.

IV 1. Prove that the square constructed upon the hypothenuse of a right-angled triangle is equal to the sum of the squares constructed upon the other two sides. 2 Show that the area of a regular polygon may be found by multiplying its perimeter by half the radius of the inscribed circle.

V 1 Show that a straight line drawn from the centre of a circle to the middle of a chord in the same circle is perpendicular to that chord, and bisects the arc subtended by that chord and the angle at the centre measured by the arc. 2 The angles made by a tangent and a chord drawn from a point of contact are equal to the angles inscribed in the alternate segments of the circle. 3. How can you construct a hexagon within a circle, and upon what proposition does this depend?

ALGEBRA.

(All the work is to be preserved.)

I. Reduce $a + b - (2a - 3b) - (5a + 7b) - (-13a + 2b)$ to its simplest form.

II. 1. Find the continued product of $5a^2$, a^3, $7a^5$, and $3a^6$.
2. Multiply [illegible] by 12 [illegible].
3. Multiply $a^3 + b^2 - c$ by $a^2 - b^3$.

III. 1. Divide 144 [illegible] by -112 [illegible].
2. Divide $-3a^m$ by $2a^{m+n}$ [illegible].
3. Divide $1 - 18z^2 + 81z^4$ by $1 + 6z + 9z^2$.

IV. Find the greatest common divisor of 75 [illegible] and 50 [illegible].

Reduce to one fraction $\frac{a}{x} - \frac{b}{x^2} + \frac{1}{x^3}$.

... problem into an equation. A person had a certain ... he first took away the third ... from the sum thus

Sample Admission Exam, 1882

two years older than their brethren in other countries, and are to that extent handicapped in the arena of life. This serious detriment to the Medical School will be still further enhanced when the four years' course is established. The Faculty of the Medical School has appealed to the governing boards of the University either to lower the standard of the college curriculum, so that students may take their A.B.'s at an earlier age, or to permit the first year of the professional school to be accepted as an equivalent for the last year in the college, thus shortening the college course by one year to all who enter the professional schools. Neither of these two concessions has been made to the professional schools, although repeatedly demanded.

James Read Chadwick, M.D.
President of the HMS Association

1892

A collegiate education is one of the luxuries of life, never a necessity . . . To bar the entrance of a young man into the medical or any other profession on the ground of a reward and a luxury is sumptuary and autocratic.

L. Harrison Mettler, M.D., Chicago, reprinted from the Bulletin of the American Academy of Medicine

Harvard has it in its power to render the cause of medical education a service hardly less important than its higher standard for a degree has done, by increasing its requirements for admission to the School. The examination should be at least the equivalent as evidence of mental training, of the examination for admission to Harvard College. Harvard wants only good men. The experience of the Medical School, as well as of the College, shows that such men are not few in number and that they will go where they can get the best return for their time and money. . . The Harvard Medical School must take first rank. It must not long be second to any school on either side of the ocean.

Report of the Committee on Harvard Medical School

1896

All candidates for admission must (with the exceptions hereinafter stated) pass examinations in the following subjects:—

1. ENGLISH. The candidate will be required to write a short composition on one of several subjects announced at the time of the examination. In 1897 the subjects will be drawn from one or more of the following works:

Shakespeare's *As You Like It*; Defoe's *History of the Plague in London*; Irving's *Tales of a Traveller*; Hawthorne's *Twice Told Tales*; Longfellow's *Evangeline*; George Eliot's *Silas Marner*.

Every candidate is expected to have read intelligently all the books prescribed. The English written by a candidate in any of his examination books will be regarded as part of his examination in English in case the evidence afforded by the examination book in English is insufficient. The candidate will also be required to correct specimens of bad English.

2. LATIN. The translation at sight of simple Latin prose.

3. PHYSICS. Either (1) Gage's Elements of Physics, or (2) a course of experiments, not less than forty in number, performed at school by the student. These must be selected from a list issued by the University under the title, "A Descriptive List of Elementary Physical Experiments," or must be approved by the department of Physics of Harvard College as the equivalent of those contained in this list.

4. CHEMISTRY. Theoretical and Descriptive (inorganic) Chemistry and Qualitative Analysis.

Each candidate will be required to hand in, at the hour of the written examination in Chemistry, the original note-book in which he recorded the work performed by him at school in qualitative analysis. This note-book must give evidence that the student has had practice in the analysis of solutions and solids containing several salts and must bear the endorsement of his teacher, certifying that the notes are a true record of the pupil's laboratory work.

5. FRENCH AND GERMAN. The translation at sight of ordinary easy prose is the chief feature of these examinations.

6. ALGEBRA, PLANE GEOMETRY, AND BOTANY. The examination in Algebra will extend through quadratic equations.

The examinations in Plane Geometry and Botany will be elementary.

Candidates who present a degree in Letters, Science, or Medicine, from a recognized college or scientific school are exempt from all the above examinations, with the exception of Chemistry.

Harvard Medical School Catalog

It is a step in the right direction which the Harvard Medical School has just taken in giving notice that in and after the year 1901 a degree in Arts, Philosophy, Science, or Medicine will be demanded for admission to the school. Nothing short of the period from 6 to 25 will hereafter suffice for adequately preparing a young man for medical practice. We want the whole of that period well filled and well used. We want it for the honor and dignity and serviceableness of the profession itself. We want it also for the just furtherance of the work which the community may reasonably expect of the profession.

Charles W. Eliot
President of Harvard University
□

On the Need to Consider
Modifications in the Premedical Education
and Selection of Applicants
to the Harvard Medical School

Report to the Alumni Council

by Edward H. Ahrens, Jr. and Carlton M. Akins

Introduction

In May 1979, the Alumni Survey Committee was asked by the Alumni Council to address this general question: "Are the physicians who graduate at the present time from Harvard Medical School adequately prepared to provide the kind of humanitarian care patients expect from a 'Compleat Physician'?" A corollary to this and, indeed, a specific focus of the inquiry was the question, "Have the Harvard Medical School requirements for admission fostered an undesirable atmosphere at the college level for premedical candidates, and if so, what can be done about it?"

The Alumni Survey Committee was specifically asked to determine whether a "premed syndrome" does indeed exist; if it does, to inquire into those factors that contribute to its development in the undergraduate premedical years; and, finally, to make certain recommendations for solutions or improvements.

As a working definition, the "premed syndrome" is that set of undesirable attributes that have been widely perceived to characterize or caricature some but not all students whose goal is to gain admission to medical school. It is a pejorative term that implies that the student is over-achieving, excessively competitive, cynical, dehumanized, over-specialized and narrow.

Two members of the Survey Committee (Edward H. Ahrens, Jr., H '37, HMS '41 and Carlton M. Akins, H '62, HMS '66) expressed an interest in exploring this problem of medical education. This subcommittee of two chose to limit its study to the interactions between Harvard College and Harvard Medical School, *not because the problem (if there is one) is unique to Harvard University,* but in the firm belief that if the problems within the Harvard community contribute to the difficulty and are remediable, the solutions thereof could very likely be extended to Harvard Medical School's relationships with other colleges.

The subcommittee reviewed the extensive literature on this aspect of medical education and held a series of personal interviews with individuals at the College, the Medical School, and the teaching hospitals. In addition, recent graduates of the College now in the Medical School, student advisors, and student health officers were interviewed. Finally, discussions were held with foundation executives concerned about medical education. All interviews were informal and in confidence and were conducted under circumstances which permitted free, open, and responsible discussions of the question.

A report was drafted, submitted to the Alumni Survey Committee, modified, and put into final form for submission to the Alumni Council on June 4, 1980. The Editor of the *Alumni Bulletin* further modified the report in order to meet certain space requirements, and the modifications were submitted to the Alumni Survey Committee for its approval. This printed version represents the consensus of the Alumni Survey Committee, as distinct from that of the *Bulletin* editors.

Edward H. Ahrens '41 is Professor at the Rockefeller University. Carlton M. Akins '66 is Associate Professor of Orthopedic Surgery at the University of Massachusetts Medical School.

The study described in this report was supported in part by a grant from the Josiah Macy, Jr. Foundation.

Brief Conclusions

1. An undesirable "premed syndrome" does exist at Harvard and is intensifying.

2. Many factors at Harvard College and at Harvard Medical School contribute to the development of the syndrome; to focus only on the admissions requirements at the Medical School is an oversimplification.

3. The existence of the syndrome at Harvard College has unfortunate consequences for the faculty and for *non*-science students as well as for those who are candidates for medical school.

4. Various solutions to the contributing causes are within practical reach. Some of these can be taken immediately; others require careful discussion and preparation.

5. There is a need for feedback mechanisms to monitor the success or failure of any actions taken over the next several decades.

The Report

A. The Premed Syndrome

In the opinion of the subcommittee, a "premed syndrome" does exist at the college level and, if carried over into medical school years, can lead to an excessively competitive, cynical, dehumanized, over-specialized and narrow individual. In the simplest form, the "premed syndrome" is characterized by a race for facts rather than the acquisition of a broad liberal education. Since admission to medical school is, indeed, a highly competitive process, grade point averages (GPA's) are perceived by students to be absolute determinants in the admissions process, with medical college admission tests (MCAT's) only slightly less critical. Success in testing is based on the ability to reply rapidly to multiple-choice questions; essays are so rarely required that students remain deficient in written and even oral communication.

"No question about it, premeds are a special breed of Harvard man. They are the people who talk ceaselessly about the last Chem 20 exam at breakfast, and who gather in little worried groups to discuss chances of acceptance at medical school. Wild rumors sweep through the ranks of premeds, leaving pale faces and young neuroses in their wake."

The Harvard *Crimson*, 1954

Harvard College students preparing for a medical career labor under several critical misunderstandings: (a) They perceive that half the class is committed to a medical course, whereas the actual number is closer to 15 percent; (b) They feel that they must get *all A's,* especially in certain critical courses such as Chemistry 20 (Organic Chemistry), or the game is lost; (c) Since premedical students are stigmatized by fellow students and by faculty for their single-minded concentration on GPA's, many hide their true intentions to apply to medical schools until late in their junior year and thereby lose whatever advantages may be derived from the premedical advisory system; (d) It is the common perception that the likelihood of acceptance to HMS is increased by taking more science courses.

Reactions to the "premed syndrome" by non-science students at the College have led to an anti-science attitude that is related to the common perception of premedical students as unpleasantly competitive colleagues. In this age of science, when a better understanding of the natural world and of the impact of scientific technology upon it is so critical, an anti-science atmosphere at Harvard College that derives from the over-competitiveness of narrow, self-seeking premedical students can only lead to further disenchantment with science at an important time in the educational development of non-scientists.

At least nine factors contribute to the development of the "premed syndrome" at Harvard College:

1. Premedical students have serious misconceptions about the admissions process, and this inhibits their flexibility in selection of courses both in and outside science.

2. College faculties in the sciences required for admission to medical school are disturbed by the teaching load imposed by the large number of students who have no intention of pursuing a lifelong career in the discipline in question. For example, at Harvard College 300 undergraduates enroll in Organic Chemistry each year, of whom only 10 percent intend to pursue a career in chemistry. The nature of the teaching requirements in the sciences, particularly the need for laboratory experience, adds to this problem.

3. Grading systems based on multiple-choice examinations have reduced the joy of learning to mere fact-gathering for the sake of gaining high GPA's. Standardized hurdles are clear deterrents to creativity, ingenuity, inventiveness, and curiosity.

4. Quantitative testing of the applicant's aptitudes and achievements (MCAT's) is given considerable weight in the decision reached by the Admissions Committee. There is no sound evidence to support the conclusion that MCAT grades have true predictive value with respect to a given student's performance (either in medical school, in the clinical years, or thereafter). The existence of cram courses specifically designed to improve a student's MCAT score is ample evidence that the MCAT's are not tests of aptitude but rather of information retention. It also is sobering to learn that the content of premedical science courses at Harvard College is constrained by the composition of the MCAT tests.

5. Both at Harvard College and at the Medical School, territorial defensive attitudes are common between departments—even within departments—and between similar disciplines at the College and Medical School levels. One can argue that such jealously guarded autonomies have been encouraged by the independence fostered by the federal grants system. The premedical student fails to thrive in this at-

mosphere unless he is strongly motivated to cross departmental barriers.

6. The highly structured advisory system at Harvard College is considered essential by all concerned. The Office of Career Services provides a sizable array of booklets, fact sheets, time schedules, general advice, and admonitions that are given to every premedical student. The material is well organized and clearly presented. Its bulk and detail clearly indicate the difficulty of gaining admission to medical school.

More personal aspects of the advisory system are important in the thirteen Houses of Harvard College where each Master selects both resident and non-resident premedical advisors. Unfortunately, many of the non-resident advisors who are engaged in practice or involved in their own hospital training only attend House premedical gatherings irregularly. The resident advisor is usually a second- to fourth-year Harvard Medical student, one of whose major responsibilities is drafting a letter of recommendation for each premedical candidate in his House. The Admissions Committee at the Medical School finds that the length and almost uniformly laudatory content of these letters (and the fact that the weaknesses of the candidate are rarely described) make it difficult to draw distinctions between Harvard College applicants. As a result, the Admissions Committee has initiated House visits by two members to discuss informally the ranking of students within the Houses.

Contacts between advisors and premedical students are limited. Many students do not declare their premedical intentions until late in their junior year, thereby losing whatever advantage the system might have offered in the preceding two-and-a-half years. Further, the lack of professional experience of the HMS student-advisors diminishes the likelihood of their effectiveness as advocates of a general education. Role models for the generalist-physician are sorely lacking.

7. Harvard Medical School has not clearly enough described the wide variety of its educational product. Its information booklet has not sufficiently emphasized that its graduates include family practitioners, other medical and surgical specialists, medical administrators, and medical sociologists as well as those in academic careers and in investigation. The image of the Harvard Medical School graduate as an academic medical scientist is traditional, and this view of the Harvard Medical School's educational goals leads many premedical students toward a college curriculum heavily loaded with science to the exclusion of broad educational studies, particularly in the humanities.

8. The Harvard Medical School admissions system consists of a senior Admissions Committee and five subcommittees, few of whose members are selected from the Harvard College faculties most directly responsible for the undergraduate education of Harvard applicants. No members of the premedical advisory system serve on the Admissions Committee. The composition of this committee and its subcommittees, their size, and the length of service are all matters for critical review.

The Harvard Medical School admissions system lacks feedback by which to measure the effects of its policies and choices in a rapidly changing world. The lack of a carefully selected set of criteria of effectiveness prevents the Admissions Office from adapting to the social changes that so strongly affect the tenor and content of medical education. There is a serious lack of longitudinal information about premedical and graduate attitudes, motivations, goals, and personal satisfactions.

9. Communications between the College and the Medical School are weak. There has been little discussion and little agreement about what constitutes the best undergraduate preparation for medicine. As an example, in spite of a University Committee on Biological Sciences, there is inadequate correlation of content in specific undergraduate science courses to help prepare a student more effectively for that subject in medical school.

B. Possible Solutions to Some Aspects of the Premed Syndrome

1. A Redefinition of the 'Compleat Physician'

It is clear today that no physician can master the entire breadth of medical knowledge or even keep abreast of the developments in science that bear on his continuing ability to maintain professional excellence. It seems inevitable that physicians will focus the scope of their professional activities even more than is customary today. Since omniscience in medicine is no longer possible, society must accept the concept of still further specialization in medicine.

The following factors can all be expected to generate dehumanizing forces bearing on the practice of medicine and to play a role in influencing the public's expectations of medicine: (a) increasing medical costs and the potential impact of national health insurance; (b) the increasing costs of medical education and the secondary effects of indebtedness incurred in repayment of these costs; (c) increasing litigiousness and defensive medicine; (d) decreased public funding of medical research both basic and applied, and the weakening of the financial security of physicians thus engaged; (e) a perceived oversupply in total numbers of physicians in the United States; (f) the changing role of paramedical personnel; (g) a growing interest by the public in becoming more self-reliant in matters of health and disease; (h) a growing dependence on data processing systems for appointments, periodic medical examinations, diagnostic tests, medical reports to patients and agencies, billing, and similar computer-

"There is still some talk in medical deans' offices about the need for general culture, but nobody really means it, and certainly the premedical students don't believe it . . . They concentrate on science with a fury, and they live for grades."

Lewis Thomas
"How to Fix the Premedical Curriculum"
New England Journal of Medicine
May 25, 1978

based processes.

If medicine recognizes and accepts the inevitability of these dehumanizing factors, then it can counter them only by greater attention to the personal aspects of the physician-patient relationship that have always proved fundamental to the practice of medicine. Physicians of the future will recognize that a firm grasp of medical science carries the physician only so far in caring for the sick. Although scientifically sophisticated, the physician more than ever before must feel and demonstrate personal warmth and concern for the individual, be a perceptive listener, be flexible but firm. It is axiomatic that the physician demonstrate personal integrity in all matters and be a concerned citizen and member of the community. Above all the physician must be open, honest, and articulate in explaining the nature of patients' problems to them and in anticipating their concerns.

All these qualities will be demanded in increasing measure as advances in medical technology proceed at a rapid rate. None of these qualities are inborn nor are they necessarily learned during premedical college years through exposure to courses in science. An understanding of human attributes is the basis of that broad area known as the humanities. If one accepts the view that medicine deals more with people than with molecules, it can be argued that whatever understanding of people we have gained has come more from literature, history, art, and music than from biochemistry. It then follows that the Harvard Medical School must assure itself that its entrants have a broad exposure to the humanities and not simply a thorough grounding in the biological sciences. The two are not mutually exclusive.

2. Restatement of HMS Goals

Unless Harvard Medical School more clearly emphasizes its intent to enroll students who are broadly educated, premedical students will probably continue to concentrate on science at the expense of courses in the humanities. Therefore, it seems necessary to rewrite the paragraphs on requirements for admission to the Harvard Medical School and to emphasize in its premedical literature the intention of the school to search for broadly educated students.

In the admissions process Harvard Medical School can also stress its intent to enroll a mixture of talents so as to insure that its graduates will enter many sorts of careers: general practice, specialty practice, academic work and basic research, public health, government, and industry. It should advertise the breadth of the career choices already made by its graduates and correct the impression so commonly held that Harvard Medical School is exclusively a training ground for medical scientists. At the same time it must reaffirm its aim for excellence, whatever career courses its graduates choose, and stress its objective to foster the qualities of leadership for which it has been long known. At the same time HMS must continue to produce graduates possessed of sensitivity, warmth, and personal concern in the care of patients.

Above all it must emphasize the personal qualities needed in the "compleat physician" and convincingly describe the need for a broad education in the acquisition of those qualities. It can be stressed that, as never before, physicians must exhibit a broad understanding of the cultural and historical background of the many races and creeds of the world, and that as individuals they must have active intellectual and socially responsible interests outside their immediate professional life.

3. Modifications of Requirements for Admission to Harvard Medical School

Revisions in the content and extent of the science requirements at the undergraduate level are urgently needed. Throughout the country these requirements have changed very little since the Flexner Report was published in 1910. For instance, chemistry, physics, biology, and mathematics courses for premedical students could be designed so as to emphasize their relevance to careers in medicine. If this were done, the exposure to chemistry could be reduced from four to three semesters and physics from two to one. The calculus requirement could be replaced by a semester in statistics and probability theory, and the two semesters in biology could emphasize studies of whole-animal and organ systems. Clearly, to effect these changes it would be necessary and highly desirable for the several faculties at Harvard College and at the Medical School to collaborate closely in rethinking their goals and priorities for those entering medical careers.

The Harvard Medical School requirement for MCAT scores should be eliminated.

In order to gain a broad educational exposure outside the sciences, the premedical student should have a small number of course requirements in the humanities. A specific suggestion would be to list ten or more non-science fields as essential to a general education and then have HMS require that at least four semesters be taken in one or another segment of that spectrum. The new Core Curriculum at Harvard College has been designed to meet this need, where a growing dissatisfaction with specialization even in the liberal arts has resulted in a restatement of goals in college education for all students. Such a redistribution of courses will still leave the student 50 percent of his time for his field of concentration and another 25 percent for elective courses.

Even if these suggestions are adopted, it can be expected that premedical students will continue to strive for A's in Literature, in the Arts, History, Social Analysis and Moral Reasoning, and Foreign Cultures as well as Science. However, the chilling effect of this competitiveness will be vastly diluted by the large number of fellow students whose field of concentration lies outside science. The nature of the student selec-

"The trouble begins for most students in the premedical years, during the fierce competition for a place in medical school . . . The pleasure of learning becomes dulled; creative thinking and dissent too often go unrewarded. Young minds should be asking those good questions for which there is no immediate answer. But that kind of questioning is not encouraged by focusing on what the teacher says will be asked on an exam."

Mack Lipkin, M.D.
"On Medical School: A Quiet Plea for a Better Future"
The New Physician
September, 1980

tion of non-science electives and the humanities will give the Medical School Admissions Committee an additional measure of an applicant's breadth of interest.

Serious thought is being given by outstanding educators to the desirability and feasibility of designing a completely separate track for premedical students. The debate lies between those who would entirely organize the teaching of biology, chemistry, physics, and mathematics for premedical students within the context of human biology and those who feel that it is absolutely essential that premedical students conform to the highest standards of excellence in whatever basic science is required. This debate should be encouraged and opened up to all concerned.

4. Re-evaluation of the Premedical Advisory System

Premedical students must be encouraged to declare their intention to enter medical school as soon as that decision is made. The advisory system is already prepared to steer candidates into course work that fits the candidate's aptitude; it must, in the future, emphasize the adventure of a general learning experience.

Mature role models are needed in the Harvard Houses to function actively as advisors. Indeed, an important impact on students can be made by physicians in practice in the Greater Boston medical community. Attending physicians at the various Harvard hospitals and outside the immediate system have the experience and wisdom to fulfill this important function, as do former members of the Admission Committees. The resident HMS student advisor can and does play an important role, but his responsibilities should be re-evaluated to meet changing needs.

5. An Early Selection Process

The Commonwealth Fund, through an Interface Program that is now in its fifth year in seven highly regarded universities, has demonstrated that an early selection process has tangible advantages for some but not all premedical candidates. By various procedures, each of the seven universities informs a limited number of undergraduates that they are assured admission to that university's medical school, some as early as the freshman year, others as late as the fall of the senior year. This assurance encourages the student so selected to take courses he would not otherwise have chosen, such as an advanced science course that he might have avoided for fear of getting a B or a course perceived to be outside the premedical science track. An effective advisory system can help identify the selection of appropriate students and be in a strong position to help widen their intellectual horizons.

Early selection (which President Conant advocated take place in the freshman year) has advantages for the early bloomer. Obviously it should not be instituted as the main channel for admission to medical school: the effect of this would be to push back the "premed syndrome" into the high school. Considerable room in the admissions process must be left for those who develop late, and the entire process must be appropriate to the selection of minority candidates.

As a specific suggestion, it would be a worthy experiment at Harvard College to select annually and over an unspecified number of years ten or twelve students early in their junior year, to notify them that their admission to the Medical School is assured, and to encourage them to broaden their course selection in their junior and senior years. The final selection of this group would be made by a joint committee representing Harvard College and the HMS Admissions Committee. This would also have the advantage of bringing together the several groups that today interact so little, namely, the college premedical advisory system, the college faculties, and the HMS Admissions Committee.

6. Longitudinal Studies for Feedback

The HMS Admissions Committee now operates in a vacuum of information about the effectiveness of its admission decisions. What is Harvard Medical School trying to produce and how can it measure its success? How does it judge whether it has made the best decisions?

An inspired beginning in this measurement process has been made by Daniel Funkenstein who over the last thirty years has questioned Harvard Medical students on a multitude of issues: demographic, educational, attitudinal, and motivational. The questions he has raised for discussion clearly demonstrate the value of and need for comprehensive information in future years. To this end the Medical School can enlist the assistance of sociologists, psychologists, biometricians, and medical educators. The availability of ongoing information thus generated would greatly strengthen the Admissions Committee's ability to keep pace with the changing times.

C. Action Items

Now

1. In order to broaden the scope of the present study and to give further insight into the nature of the "premedical syndrome" and possible solutions to the problems it presents, a one-day conference should be set up with the following participants: third-year Harvard Medical students drawn from Harvard College, and senior premedical students at Harvard College. The agenda for this should be carefully prepared and guided by members of the College and Medical School faculties and the Admissions Committee. This conference must not be cosmetic; if informative, as expected, it could become an annual event.

"Overheard on the stairs: Professor A: 'How are things in organic chemistry?' Professor B: 'Average. Two attempted suicides.' Laughter."

Charles LeBaron
Gentle Vengeance, 1981

2. In the HMS information booklet the paragraphs under "Admissions Procedures" should be revised to stress the need for a broad educational background and to spell out so far as possible the personal qualities required in the physician of the future. It should emphasize the broad spectrum of career choices that Harvard Medical students have elected in recent years and can elect in future decades. Application forms and premedical admission packages should be revised accordingly.

3. Deferred entry to the Harvard Medical School should be permitted, giving entrants a year or two away from college and medical school without the necessity for reapplication.

4. The premedical advisory system should be re-evaluated, particularly with respect to the following items: counseling on the humanistic aspects of medicine, evaluation of the different strengths and objectives of the various medical schools, and a realistic appraisal of the student's personal as well as academic strengths and weaknesses. Advocacy is less desirable than is sound advice.

Very Soon

1. An early selection process between Harvard College and Harvard Medical School should be set up.

2. The requirements for entrance to Harvard Medical School should be re-evaluated with the intent to reduce the chemistry and physics requirements and substitute statistics for calculus. Emphasize the values and objectives of the new Core Curriculum. Eliminate the requirement for MCAT scores.

3. A thorough interchange of information about the course content in basic sciences at the College and at Harvard Medical School must be encouraged through joint meetings of College and HMS faculties.

How?

Various options are available to the deans of the College and the Medical School and to the president of the University. Among these is the possibility of a committee similar to that which was involved in the development of the new Core Curriculum at Harvard College. Alternatively, the project could be entrusted to a single individual to work with a small number of advisors in the areas most concerned: notably, the faculties in the basic sciences, the liberal arts and medicine, and the administrations of the College and Medical School. A third alternative would be a small committee of University visitors appointed by the president outside the present Overseers Committee to visit the Medical School. It would be the function of this committee to set priorities and the timing of all changes needed and to report directly to the president.

Perhaps the most important consideration in this regard is the fact that outside funding for the improvement of premedical education will be needed. In view of its urgency, funding can almost be guaranteed. Many foundations already have demonstrated their deep concern in this regard. A million-dollar grant spent over the next three to five years seems to be a realistic objective, given the many factors involved. The scope of the problem, the many segments of the University involved, the need to finance experimental teaching programs, and the costs involved in setting up longitudinal studies needed for an improved evaluation of the admissions process require a major commitment. □

A Message from the Dean for Students and Alumni/ae

An excellent physician is a complex blend of intellect, warmth, pragmatism, endurance, ethics, and vocation. The preparation of such a person begins at some unknown point early in the individual's life, accelerates during formal schooling and clinical training, and never ends; and we are not sure what things foster or impede this development. Indeed, I do not believe any one approach has been consensually demonstrated to contribute to high quality in the result. No one has proven that this or that early experience, premedical program, admissions procedure, medical school curriculum, or on-call schedule is better than another in developing the ultimate product: thirty or forty years of excellence in some area of practice, research, or teaching.

One of the difficulties in studying this whole process is that none of the environments in which it occurs is exclusively committed to educating physicians. The family of a future doctor usually has other children, and always has other goals and needs. The college that provides premedical education is never exclusively comprised of premedical students; there are many more students and faculty occupied in liberal arts, social sciences, and myriad other disciplines. Even the medical school pursues research and graduate study in addition to medical education; often only a minimum of effort is spent on undergraduate medical students. The hospital environment melds patient care, research, and community service with the needs of physician training. Thus, it may be impossible to isolate the contribution of any one factor to the amalgam that we call a good doctor.

The process of medical education is constantly under scrutiny. Whether because it is so expensive, or because the access is so limited, or the product is so valued, every step is re-examined and often recast before the result of the previous change can be assessed. Premedical requirements change, the MCAT's are redone, the curriculum is altered, new clinical programs emerge, and still the desire to do it ever better is unsated. Harvard Medical School is as prone to such self-flagellation as any, and this issue of the *Bulletin* reports a valuable effort by the Alumni Survey Committee to illuminate one step in the process: the college experience of the premedical student, including its impact on others in the environment. As in reports from prior Survey Committees, this study reveals the many insights gained by individuals not directly involved in the process; additional observations are provided by some who are active on one or the other side of the procedure. All of us currently charged with the challenging responsibilities of selecting and educating future physicians welcome the comments, suggestions, and, yes, criticism, of HMS alumni.

— Daniel D. Federman
Dean for Students and Alumni/ae

An Interview With Robert Kiely

What are the protective adaptations of premeds in one Harvard habitat? The Master of Adams House should know; he lives with them.

by Laura Singer

Robert J. Kiely is Master of Adams House and Professor of English at Harvard University.

PHOTOGRAPH BY JANE REED

Some highly research-oriented professors tend to downgrade premeds, assuming that the brilliant students are the ones going into research.

While its architectural elegance recalls a time when inhabitants were privileged, white, and male, Adams House has undergone a number of demographic shifts over the last fifty years. These days, the Plympton Street address is a haven for many of Harvard's undergraduates interested in art, theatre, and music. A good percentage of women, minorities, and foreign students are now counted among its 350 inhabitants—as varied a coalition of people as one is likely to find in any Harvard domicile.

Adams, like the other twelve upperclass Houses at the College, is modeled after the English system in which students and their teachers occupy the same quarters—the result being a more complete integration of social and intellectual life than is commonly found on campuses in this country. If he were around today, Abbott Lawrence Lowell, who introduced the residential college plan to Harvard a half century ago, would probably be pleased to note that the calendar of events in Adams and the other Houses currently includes lectures, theatre, intramural sports, political discussions, women's groups, and musical activities—proof that the system has not only endured, but has surpassed the Oxford-Cambridge prototype.

Robert Kiely, Master of Adams House, attends to the nuts and bolts of administration—preparing the budget, hiring the staff, and so forth—as well as overseeing the myriad activities which go on under that roof. As he puts it: "My job is to encourage, foster, initiate, and keep it all percolating, so that the students' living environment becomes, in effect, an extension of their education."

As the repository of the students' academic records and the locus of preprofessional advising, the House plays a critical role in the often cumbersome and anxiety-filled process of applying to medical school. Kiely's objective in all of this is to assemble a group of tutors and advisors who work well with the Adams House populace, providing guidance, support, and advice from the expedient position of someone who has already been through it. His other task, less obvious but equally important, is to "help students live well in the present"—not always an easy order as the crunch for acceptance to graduate schools intensifies.

Master's residence, Adams House

And what of the premeds in Adams House? It appears that the "premed syndrome" is unlikely to reach epidemic proportions in this place where students more often than not possess a breadth of talents and interests which bridge the traditional arts/science dichotomy. An interview with Kiely yielded some incisive comments on premeds and premedical training, ranging from specific, practical suggestions on how admissions committees might be able to streamline the application process to more philosophical musings on the function of a liberal education.

LS: What special services and activities do the Houses provide for premedical students?

RK: Not only in medicine, but for all careers, we try to get students as much help as possible in choosing a profession. This involves selecting good preprofessional advisors who live here; in Adams House we have a resident couple who are premedical tutors—"Sesh" [Sessions] and Pat Cole. He's a pediatrician and she just finished Harvard Medical School. They're a fantastically good resource for our students—a husband and wife going through it, working it out with their marriage; so they're particularly well equipped to help our students, not only with the intellectual side but also with the personal side of things.

The Coles are also very experienced by now in helping people choose the right medical school once they've decided that medicine is what they want. This involves having a very good sense of what different schools offer, what the demands are, how big they are, what the atmosphere is like, and so forth. The Coles have a tremendous influence on the way students apply and on the degree of success they have in getting in. We've been lucky with our premedical tutors: at least one of the two has always been a practicing physician—someone who has actually gone

PHOTOGRAPH BY CHRISTOPHER S. JOHNSON

Medicine seems almost like a religious calling: When you're accepted, you're one of the 'chosen'. Rejection seems to be traumatic, and few students face up to it with equanimity.

through it already.

In addition to the resident tutors we have three or four non-resident advisors—mostly medical students, although one is an obstetrician. They come around for supper and talk with the students in the dining hall. The best of them are definitely *not* recruiting people for the profession—they really want to be be able to get to know them, which is why the informal get-togethers in the dining hall are important. We'd like the students to trust these people enough to be willing to pour out their thoughts to them and say, "I'm not sure I can be a doctor; I don't know if I have the temperament for it"—to express their doubts and fears as well as their ambitions.

LS: I gather from what you've said so far that you think the advisory system works well at Harvard.

RK: Well, first of all, anything I say to you is about Adams House only. I think we've got a good group of tutors who work well for our students. One of the things that I think a Master has to learn—since there is no rule book about these things—is to get a sense of the kinds of students you've got in your House and which individuals will work well with them. A job description for a good premedical advisor may not be the same for Eliot House or for Kirkland House as it is for us. We have quite a different clientele, and only somebody who lives here can judge that. I think any premedical student who has been in Adams House since the Coles have been with us would agree that the system is successful; I get a good amount of feedback, both written and oral, saying how supportive and informative our resident tutors have been.

LS: About how many of the students who live in Adams House are premed?

RK: This year we have a senior class of about 105. Out of that number, about 15 have declared themselves to be premed. I think this is about average for the College.

LS: How closely do they resemble the syndrome-afflicted individuals described in the Alumni Survey Committee Report?

RK: Not much. One of our most brilliant premeds, who is a senior this year, is also a concert pianist—but that's an Adams House type. No doubt he lives here because we have a large number of residents interested in music. We have relatively few "pure" scientists in the House. The ones we do have, whether they are premeds or physicists or whatever, have either a very strong interest in the humanities or the arts, or at least they know they are going to feel at ease with other people who do.

I know what the premed caricature is, and we have some like it who are hardbitten, strive for all A's more than true intellectual growth, and take only the courses they think are going to get them into medical school. Our advisors usually tell them not to do that, it's not good for them, and the best medical schools really don't appreciate it. I would assume that some small percentage just resist that advice and go ahead and do it their own way. My impression is that medicine, to a much greater extent than law and business, seems to be a profession in which parental precedence and pressure comes into play. An awful lot of premeds have fathers or mothers who are physicians, who begin very early to groom their children for medicine and have strong opinions about how to prepare for medical school. When you're a parent, there's a tendency to think you don't have much influence on your children; but when you're on the other side, you often see very powerful forces at work.

I can think of one particular person who was here a few years ago whose father was a physician, and I guess if I were to think of the stereotypical premed, this guy would be it. With him it was, "My father says this, my father says that." He just seemed to be on a conveyor belt—very, very, uninterested in anything at Harvard that didn't pertain to medicine. He wasn't very sociable, but he was an exception—for this House anyway.

LS: As I read the Alumni Survey Report, I couldn't help wondering if the "premed syndrome" is really much different from, say, a pre-law syndrome or a pre-business syndrome—part of an overall trend among students these days to be more intent on career preparation than their predecessors were a decade or so ago.

RK: Well, in a sense there is a difference. For one thing, there are no specified courses that a pre-law or pre-business student must take. Some pre-business people major in economics, for example, but there is no prerequisite. They might specialize in anything from Far Eastern Languages to Modern Art to English, and then decide to go into management at some point during the senior year or even later. The same kind of situation exists with law, because, quite simply, there is no pre-law course. So medicine is automatically separated from the other professions because it's the only one that requires a certain set of courses at the undergraduate level—the most notorious of which is Chem 20. There are a number of courses which all premeds either feel they must take or are told they must take before they get out of here. In those courses they discover one another, and the professors tend to size them up as premeds.

There's another phenomenon which my wife, who is a geneticist, became aware of when she was studying biology. She observed that some highly research-oriented professors tended to downgrade premeds, assuming that the brilliant students were the ones going into research and the less good scientists were going to become doctors. That may be another way in which premeds feel themselves typed. So I think there is one very simple answer to your question: They do get themselves cate-

If what "dehumanized" means is insensitive and inflexible and lacking in curiosity, I don't know that taking an extra couple of English or fine arts courses at the age of eighteen is really going to pull the trigger.

gorized through a curricular path.

I don't think premeds necessarily hang out together; they don't form a social unit *per se*—at least not in this House. But the students' preparation for medical school seems to be more time-consuming than it is for law or business school. When sophomores move into this House, they'll start having group meetings right away with the premedical tutors, and by the end of that year those who think they are premed will have been identified. By the beginning of junior year they're starting to hold individual conferences with the tutors. The entire process of gearing up for medical school takes almost three out of four years in some fashion. With business school, in contrast, no such thing goes on. There might be an occasional orientation or indoctrination meeting, but usually not until the senior year is well underway.

I'd also point out that getting in or not getting into medical school seems to be much more emotionally charged than getting into other professional schools. For example, we had two young men in our senior class last year—both scholarship students, very good people, not top honor students but certainly not poor students. They both applied to medical schools and went through the whole process, with all the time, energy, and emotion that goes into it—and they didn't get in. They went through their graduation feeling in certain respects, I think, like failures. No one else thought of them that way; they were very highly regarded by their peers, certainly by their tutors and advisors. They both got a Harvard degree; they really should have been proud of themselves, but it seemed that they left here feeling terrible.

I don't get the impression that in the case of business school or law school or any other graduate school, for that matter, there is so much at stake psychologically. Medicine seems much more a vocation in that sense—it's almost like a religious calling: when you get accepted, you're one of the 'chosen', and you go through an initiation rite for the next six years or so. Rejection seems to be traumatic, and few students face up to it with equanimity. Of course, we've had students who've gone to summer school and taken another organic chemistry course and reapplied and they have made it—there are people who are very persistent.

Although we're said to be living in a time when everyone is out for himself, I can't help but feel that's less true for premeds than for some other students. Eight years ago, when I first came here, we hardly sent anyone to business school. An Adams House person wouldn't be caught dead there; it wasn't considered a moral thing to do. Now we have three business tutors and a certain number of people who say, quite candidly, "I want to go to Wall Street and get rich."

But by and large, people who want to make a lot of money don't do it by way of medicine. Many of the premeds are really idealistic about service. They work in hospitals over the summer for little or no pay. That gets onto their application, but I don't think that's why most of them do it. They feel it's a profession in which they can have self-respect and do something worthwhile, though they are not unaware of the eventual income bracket.

Since jobs in teaching are getting to be scarce, a lot of my students who would have gone into academic life when I first started teaching don't now because of the poor job market. Their options tend to cluster around law, business and medicine. If they have a scientific aptitude at all, the more service-oriented ones are likely to choose medicine. On the contrary, I have the feeling that students too often go into law these days for no reason except that they don't know what else they want to do. They know Harvard has a good law school and they can always make a good living. Some of them are very cynical. I don't get that impression from premedical students.

LS: In speaking with some of the Medical School alumni recently I suggested that perhaps there were analogies to the "premed syndrome" in the other professions—that prospective physicians don't have a monopoly on overcompetitiveness and obsession with grades. The answer I got was, "Well, it doesn't matter so much in the case of other professionals because they don't work closely with people in the way doctors do. Caring, humanity, and compassion aren't as important for practitioners of law and business. Therefore, the consequences are more serious when a premedical student goes through a process that some observers consider "dehumanizing"—which leads me to another question: Do you think that a student who immerses himself in science and thereby limits the number of humanities courses he takes, runs a greater risk of becoming dehumanized?

RK: I don't think taking courses is what humanizes or dehumanizes you. By the time you get to college, you're seventeen or eighteen. Furthermore, if you choose a place like Harvard—whether you're a premed or not—you're required to take a certain number of non-science courses. Coming here and just doing science is impossible. But, if what "dehumanized" means is insensitive and inflexible and lacking in curiosity about people and ideas and beauty, I don't know that taking an extra couple of English or fine arts courses at the age of eighteen is really going to pull the trigger; it may, but I doubt it. In any case, Harvard discourages students from restricting themselves to a very narrow training. The whole thrust of the Core Curriculum, the House system, and the advisory system is to make sure they don't.

I also think that students now plot their way much more carefully than when I was in college. They're much more goal-oriented; they have a tactic or strategy in mind—though not neces-

I think that the interest the medical schools take in the character of the applicants is admirable, and although it complicates and prolongs the application process, I wouldn't want that to stop.

sarily a narrow or cynical one. If someone decides by sophomore year that he or she wants to be a lawyer or a doctor, that student will sit down with advisors and try to figure out what is the best possible route. By contrast, in the fifties and early sixties, you took the necessary courses, but you were more relaxed about it. Of course, the competition was almost nothing in comparison, so you wouldn't have to worry.

LS: Do you think this all-consuming process of applying to medical school, particularly the part that happens in the senior year—flying around the country to interview, filing separate applications for twenty or so schools—could or should be simplified?

RK: Well, I think that the interest the medical schools take in the character of the applicants is admirable, and although it complicates and prolongs the application process, I wouldn't want that to stop. From my point of view, a very big plus for medicine—and here my experience is more with Harvard than with the other medical schools—is the fact that the admissions committee seems to take much more of an interest in the character of the applicant than law schools or business schools do. Harvard Law, for example, doesn't require personal interviews—in fact, it discourages them. The Business School has them in some cases. But both of these admissions committees seem much more concerned with numbers than with the personal or ethical qualities of their applicants.

The Medical School, on the other hand, appears to pay a tremendous amount of attention to letters of recommendation and interviews. Members of the admissions committee will come to the House and discuss the applicants they're interested in. They really seem to be trying to figure out whether these are good, trustworthy people with some depth of character; and, in general, it appears that those of our students who have been accepted

to Harvard Medical School have been not just academically good but really very fine people.

I think interviewing, insofar as it can be afforded, is valuable. It almost always helps a good candidate or a borderline candidate—someone whose grades may be weak. We had a case last year of somebody who wanted very badly to go to Stanford. His grades were decent, but not the very best. On the other hand, he was an absolutely golden person. The Coles practically stood on their heads to get him an interview because they knew this would be the decisive factor. It did the trick. As soon as the interview was over, they said, "We'd like him." They saw that he could be a good doctor.

I guess it would be nice if the written applications were more nearly alike. It's an enormous clerical task at the moment. Also, I think that it would be very useful—and many medical schools do this already—to have some direction about what is helpful information in the letters of recommendation. Of course, an awful lot of the material is there in the record: the student's transcript, grades, and so forth. Often we pull material out of that record to highlight in the letter. Now if the admissions committee only looks through the folder rather quickly, then it's good that some of that information is highlighted. However, if the committee looks over the folder very carefully, the letter may be redundant. Unfortunately, letters of recommendation, like other commodities on the market, are valued by size. When it's a skinny letter, it can appear that the candidate is less desirable. If the medical schools could get together on exactly how much detail and information the letter should contain, and maybe a limit on length, that would be a tremendous help to us.

LS: Backtracking a bit, when the Core Curriculum was introduced, did that change the amount of science or humanities courses that students are required to take?

RK: No, not really. The Core Curriculum probably affects premeds least of all. There was already a distribution requirement, and the Core was developed to tighten that up, because in all fields it had gotten sloppy. The Core

PHOTOGRAPH BY RICK STAFFORD

Dehumanization has much less to do with taking this science course or not taking that English course than with paralyzing your ability to be alive right now.

makes the science requirement a real laboratory science. In the humanities the thrust is now more toward theory and analysis and less toward coverage. Before, the emphasis was on learning Western Civilization; now, you might deal with Asia or Africa or Europe or North America—the subject matter is less important than learning ways of analyzing cultures, societies, systems, or modes of behavior. It's an attempt to give students the tools of analysis and understanding so they can apply them—whether in science or humanities—to new material.

We've only had the core for a couple of years, but if it works I think it could only have a beneficial effect for all students. I think premeds have often felt, "Oh my God, I'm going to graduate and I've never read *War and Peace* or *Hamlet*." The whole rationale for the Core Curriculum is supposed to make them understand that that's not the point. Maybe it's better to learn *how* to read a play or *how* to look at a painting and then go off in your life and do it, than to cover a certain amount of material in school. Similarly, in the sciences students are taken through the steps of analysis and laboratory experimentation, not with the expectation that they will have learned the full survey of physics, for example, but rather something about what the scientific process is.

LS: Do you have premeds in your English classes?

RK: Oh sure.

LS: Do they come up to you after class and beg for higher grades?

RK: Oh no, never, never! Incidentally, many of the English majors I have in my classes end up going to medical school. As for the premeds who major in science, sometimes they're recognizable, sometimes not. Occasionally they identify themselves by admitting that this is their first English course. I guess if premeds share a common trait it's that they work hard in anything they do; they're not slack-offs. And I enjoy the ones in my classes because they haven't got the slick jargon of your hardened English major who's been through it for years and knows how to dash off a quick paper on metaphor.

LS: Do most of the premeds that you've been involved with here want to go to Harvard Medical School?

RK: I don't know the answer to that. The Coles would be more concerned with those kinds of specifics. I deliberately *don't* inquire, I think, because it always sounds as though you expect them to say yes—the assumption being that since we are at Harvard, well, HMS *must* be the best. If one is thinking about dehumanization or undue building up of pressure, it seems to me that one of the things that Harvard or any highly competitive institution does to people is build up psychological pressure precisely through questions like that.

For someone who is a sophomore or junior, who is a little unsure of many things, asking if he or she hopes to go to Harvard Medical School can have all kinds of implications: If you're smart enough you would go there, wouldn't you? Aren't you willing to try for it? Are you afraid of not getting in? There is an awful lot of loaded asking that goes on; and I think from a House Master, especially, it could come across as threatening.

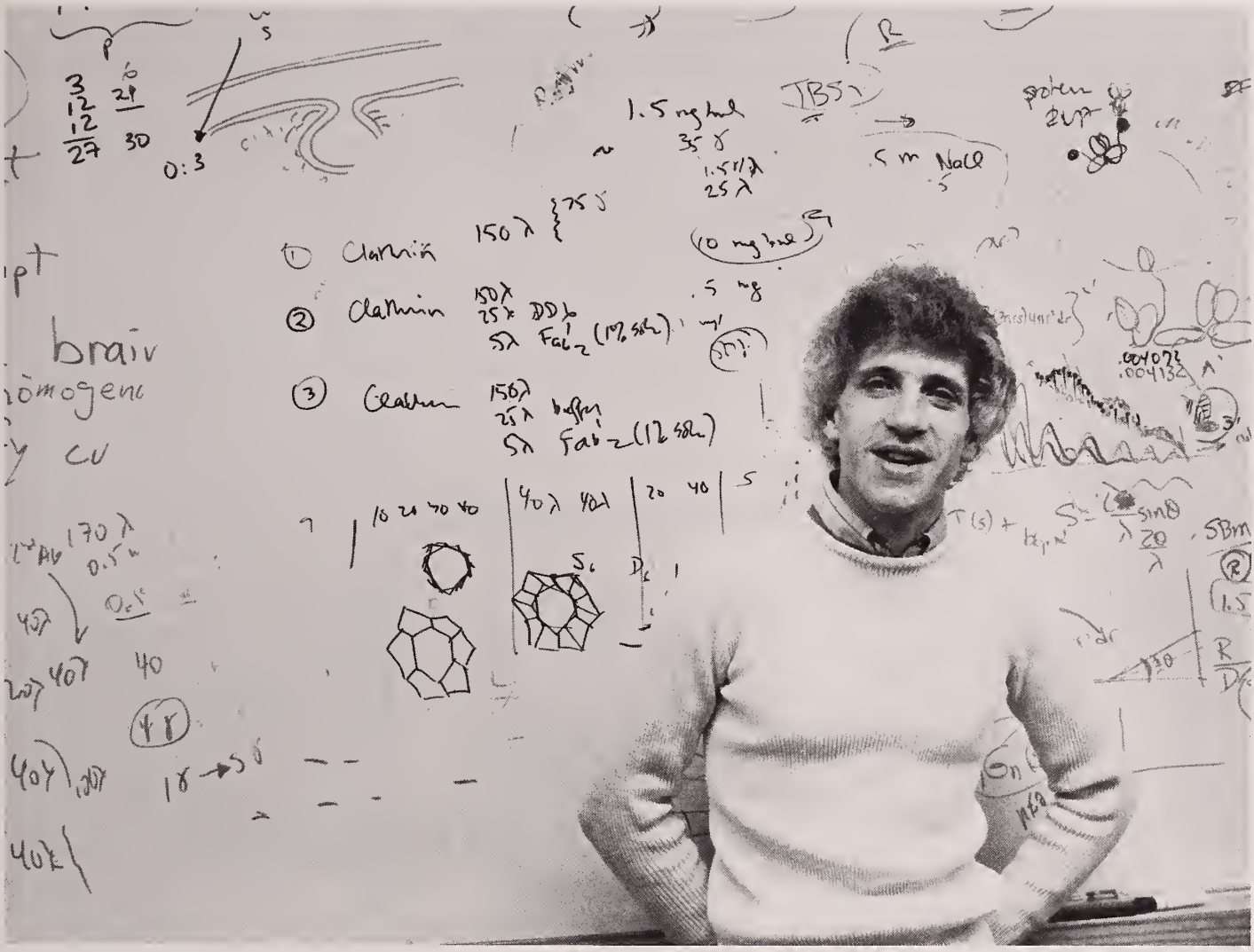
So I ask fewer and fewer questions about their future. If they want to talk to me about it, that's fine; but I would much rather know what they are reading, what they're feeling at the moment, if they've had any new ideas lately. There are wonderful people in this House, and I love to go into the dining hall and talk with them. And the future will come out—it comes out on its own.

If I were going to describe my job in the most existential way, although I hire tutors and advisors and so forth, I think my most important task is to help the students live well in the present—not just to be thinking in the usual American fashion about what's next. That's so built into our whole system, and academics are especially guilty of it, beginning with, say, getting into the best nursery school, then what prep school, what college, what professional school, then what residency, then what hospital, and on and on. Sure, one has to plan; but dehumanization, after all, has much less to do with taking this science course or not taking that English course than with paralyzing your ability to be alive right now.

In an academic institution, especially, talking about the future always invites the possibility of competitive comparison, so that, even among colleagues, "What are you doing next summer?" translates to, "Are you writing another book?" or "Have you been invited to lecture somewhere?"—and I don't consider that interesting conversation. It's nice peripheral information, but not what I care about if I have a few minutes with somebody I'd like to get to know. This has also taught me what I want from my staff. I want tutors who are going to be able to communicate with students intelligently as well as professionally. If the students make good doctors or good lawyers or whatever, that's wonderful; but first and foremost, they have to be treated as human beings.

I'd like our students to realize that whatever happens later on—whether they go to HMS or not—they are already in an extremely interesting place and going through an important and interesting part of their lives; and that if they numb themselves so much in the present in a kind of anxiety about the future, they are doing a terrible harm to themselves. I think we have to help them think about the future, but we've really got to help them learn how to live well in the present; and I would say that that's a much more important function of a humanistic education than getting into medical school. So now I'm giving you my philosophy.

LS: Well, it's a much better answer to that question than I ever expected. □



Is an education in the sciences dehumanizing? Does studying the humanities guarantee compassion? A biochemistry professor speaks out.

Natural Sciences and the Foundations of Medical Studies

by Stephen C. Harrison

Stephen C. Harrison is Chairman of the Board of Tutors in Biochemical Sciences and Professor of Biochemistry and Molecular Biology at Harvard University.

PHOTOGRAPH BY JANE REED

The radical separation of university premedical and medical education is a peculiarity of the American university system. It is also an important strength. But there are naturally tensions at the interface, and they generate just the debate over premedical preparation to which this issue of the *Alumni Bulletin* is devoted. My purpose in what follows is threefold: first, to discuss the nature of premedical education in the natural sciences, from the perspective of a faculty member heavily involved in such teaching; second, to suggest the contribution of this education to medical science in general and to its extraordinary depth at Harvard in particular; third, to describe my own view of the premedical "scene" at Harvard College. I conclude with some suggestions for conservation as well as for change.

Before turning to these issues specific to medical education, however, I need to deal with a very general misconception: that there is something inherently "dehumanizing" about an education in the natural sciences. This attitude is deeply wrong, for at least two reasons: first, because a proper education in mathematics, physics, chemistry and biology is above all an education in clear thinking—and surely clear thinking is "dehumanizing" only to those who equate "humane" with "muddle-minded"; second, because genuinely human use of the power of contemporary technology, in medicine as elsewhere in our society, demands a profound command of the foundations of this technology.

It is a dangerous self-deception to suppose that the extraordinary results of modern science can effectively be deployed by men and women who do not understand them, that a deep appreciation of this human context can compensate for a shallow comprehension of the scientific facts. Much of the current debate about education for leadership in our society falls into confusion at this point. The spectacular power of technology creates complex problems of application and administration, but the powers and problems cannot be dealt with by people ignorant of their genesis or distrustful of their creators.

Undergraduate teaching at its best is quite different both in goal and in character from medical school instruction. The one can devote significant effort to developing critical thought, intuition and overall perspective on a subject. The other must necessarily emphasize acquisition of information. This is true independent of the subject matter. The focus of a good undergraduate course in organic chemistry is on general features of mechanism and molecular behavior, despite the quantity of detailed fact-learning necessarily required—just as the focus of a course in modern English literature is on broad themes or unifying trends, despite the large number of texts to be analyzed. Premedical education in the sciences can aim to develop a real understanding of the properties of molecules and of living cells in a context of critical and quantitative thinking. It can do so precisely because it is embedded in an arts and sciences faculty rather than in a medical environment as such.

Certain assumptions lie behind the last two sentences. I should like to make some of them clear. The most important is that scientific thinking plays a central role in medicine. This is essentially the point of view, endorsed by the Flexner report, that led to the requirement of a bachelor's degree and of a minimal premedical training in the natural sciences. Restatement of this point is not meant to deny the crucial significance of broader cultural awareness in the day-to-day practice of medicine. It is meant, rather, to remind us of the limitations of technocratic decision-making without basic mechanistic understanding. I return to this point in the next section.

A proper education in mathematics, physics, chemistry, and biology is above all an education in clear thinking–and surely clear thinking is "dehumanizing" only to those who equate "humane" with "muddle-minded."

A second important assumption is that good undergraduate education in the sciences can teach students to think rather than just to assimilate facts. I believe that the study of physics or of biochemistry is not only useful in medicine, but outstandingly effective in developing mental rigor and intellectual imagination—the combination of virtues that proponents of the study of ancient languages used to claim for the classics. Moreover, I am convinced that we do rather a good job in a number of such fields at Harvard College. Undergraduates in Biochemical Sciences do not only follow a series of courses in Biology and Biochemistry; they also have three years of an individual tutorial and the opportunity to research and write a senior honors thesis. By constantly emphasizing the coordination of chemical, physical and biological approaches, I think we often succeed in educating thoughtful young scientists rather than merely producing effective technicians.

A third assumption is that the requisite approach to scientific understanding can be communicated in a modest nucleus of courses, leaving students the flexibility to concentrate in other fields. Experience shows that this is true. The possibility of concentrating outside the sciences is an exceptionally positive feature of the American division between undergraduate and medical school. But we must avoid pressure to water down premedical science offerings or requirements in response to pressure from premedical students in other fields. They already have the extraordinary opportunity to combine a degree in the humanities with preparation for a medical career. Well qualified students who pursue this option succeed without trouble in managing a strongly two-sided program. We must not minimize the significance or content of the science part just because we recognize the talent needed to combine the two. It is for just such talent that the admissions process hopes to select.

If we accept the argument just outlined—that the science component of undergraduate premedical training is to impart some ability to think about molecules, cells and organisms and some understanding of interactions at and between these levels of organization—then the structure of the requirement is fairly well determined and corresponds closely to the current view. In mathematics, the notions of rate of change and of accumulation—i.e., the elements of differential and integral calculus—are clearly essential both in medical applications and in understanding physics and chemistry. Some knowledge of statistics is probably also useful, but statistics can best be presented if some calculus is used in its development.

In physics, sufficient background is needed to understand introductory electromagnetism and wave motion. This requires at least a year. The applications to medicine (from EKG to microscope) are obvious; equally im-

portant is the preparation for understanding physical chemistry or for physico-chemical aspects of physiology. In chemistry, students should understand bonding, equilibrium, phenomenological kinetics, ions in solution, oxidation-reduction, and elementary electrochemistry—the physico-chemical essentials of physiology—and they should have a thorough course in organic chemistry. For those with strong high-school chemistry, this could perhaps be a streamlined three-semesters rather than an obligatory two years, but for those with little background it is hard to imagine being able to communicate in less than four terms any real sense of how molecules behave. And in Biology and Biochemistry, a thorough understanding of genetics and of molecular biology takes at least half a year —probably longer for students with little previous biology.

Medical schools could, of course, choose to teach any or all of these subjects; in England, they do. But the four-year medical course offered at Harvard and throughout the U.S. has no room for these indispensible basic sciences. Indeed, one of the great advantages of the system is that a choice between an essential nucleus and a more extensive concentration can be made (and reversed!) in a flexible way during the undergraduate years. Since decades of experience have shown that a program comparable to the one just outlined can effectively be combined with concentration in any field of study, there seems to be little reason to restrict it further.

Science in Medicine

It has recently become fashionable to downgrade the importance of scientific thinking and of basic research in medicine. I believe this to be a dangerous trend, one which our leading medical schools and Harvard in particular should strive to reverse. There seem to be two main lines of argument: One is an attempt to minimize the importance of basic research in advancing modern medicine. Advocates of this position consistently overlook the contributions of basic microbiology, electrolyte physiology, immunology, and biochemical pharmacology to curing and controlling disease, and it is not very difficult to refute their arguments.

The other line is subtler: It insists firmly on the "Art of Medicine," on the importance of training at the bedside, on the need to treat the whole patient; but by implication it diminishes the role of rigorous thinking and quantitative evaluation. No one should deny the overwhelming importance of sensitivity and compassion. Indeed, I quote with great respect and total accord the following excerpt from the Biochemical Sciences supplement to the official Register of Harvard University for 1962-63:

> Medicine is both a science and an art; it makes use, in its scientific aspects, of a vast number of the techniques of modern science, and the thoughtful practitioner of medicine must continually apply his knowledge of scientific principles in a rational approach to the problem of diagnosing and treating disease. Thus, to understand the treatment of shock, one must know (among other things) the nature of the chemical phenomenon of osmotic pressure in its relation to the movement of water between the blood and tissues. For an understanding of the therapeutic action of drugs, one must know something of the physical chemistry of the interaction between enzymes and the substances that inhibit their action...
>
> At the same time, however, a doctor is called upon repeatedly to aid his patients in the midst of emotional crises, to recognize the importance of feelings of fear, guilt, and other emotions that may largely determine the nature of the patient's illness and to take into account his family situation and other economic, social and spiritual factors that may profoundly modify the course and the outcome of the illness...
>
> The term "the art of medicine" may well be used to designate this great realm of phenomena which are of supreme importance in practice, but which are not yet adequately understood in terms of scientific principles. Although the science of medicine progresses year by year, and there seems to be no limit to its possible progress, the art of medicine will always be indispensible in the relations of physicians and patient.

The depth in basic research at Harvard should be a source of especial pride, and we should select medical students who are particularly prepared to profit from and contribute to it.

In an era in which technological progress will continue to facilitate diagnosis and treatment and in which biomedical research will continue to deepen basic understanding of disease, the truly adept at the Art of Medicine must have the scientific background to make these advances clear and relevant to the patient and to apply them judiciously. He or she must know more, not less, of such diverse areas as physiology, genetics, and computer science in order to be effective in compassionate medical care.

There is a further point to be made in the context of admissions policy at Harvard. The Harvard medical institutions are a unique collection of biomedical research institutes as well as an extraordinary group of clinical facilities. The depth in basic research should be the source of especial pride, and we should select medical students who are particularly prepared to profit from and contribute to it. The College has long recognized the value of this resource: the program in Biochemical Sciences has, since 1926, drawn a large number of its tutors from the medical faculty, and this year, for example, twenty-one seniors wrote theses for which laboratory research was carried out on the Boston side of the Charles. In fulfilling its leadership role in American medicine at a time when critical objectivity is being questioned and basic research is being threatened, Harvard Medical School should draw on its particular strength and continue to place emphasis on advancing our command of the foundations of human biology.

Premedical Students at Harvard

A bottleneck of more aspirants than positions will always generate competition. Some tension is inevitable among students hoping to make a career in medicine, as long as there are more such students than places in the profession. This tension tends to express itself at two stages: in introductory science courses required for admission to medical school and during the senior year while applications are

being considered.

Most of the popular view of the "premed syndrome" focuses on the effect of competition in particular courses, most notoriously Chemistry 20 (Organic Chemistry). Certainly plenty of students each year complain of the atmosphere in such courses. But a few loud complaints are always more audible than a more moderate general reaction; and most of the undergraduates, advisors, and faculty with whom I have talked while preparing this article agree that competitive attitudes in such courses are probably no more intense than can reasonably be expected and that they do not denature the course. Of the courses that might be described as constituting the premedical "hard-core" (Math 1, Chem 5, Chem 10, Chem 20, Physics 1, Biology 7), only Physics 1 ever indulges in multiple-choice exams or pays attention to the MCAT syllabus. Even there, such attention is modest; teaching is committed and serious; and for serious science students, Physics 12 exists as an alternative.

Nor are faculty attitudes towards premedical students as negative as often described. Many of us are proud that we send on to medical school scientifically well educated candidates, and we are pleased to have a role in this process. Currently, about three-quarters of the undergraduates in Biochemical Sciences go on to study medicine. Those of us who teach them in tutorial or supervise their senior honors theses in no way resent or regret this direction. Sometimes, of course, there are students who participate in such tutorials largely to improve recommendation letters. But the frequency of such cynicism at Harvard College is probably no greater than realistic assessment would anticipate.

Far more serious, in my view, is the way in which the medical admissions process itself disrupts the senior year. Harvard College students routinely apply to twenty medical schools. The time, attention, and money required is substantial, especially if interviews ensue. Each year there are several cases in which research on a senior honors thesis in Biochemical Sciences is subverted by over-attention to the process of applying to medical school—an over-attention encouraged by premedical advisors and by admissions committees. What could be the real fulfillment of a student's undergraduate experience—a rich and exciting senior year—is wrecked by interview trips and by the stress of "rolling" admissions procedures.

If a good Harvard undergraduate must apply to twenty schools, is so capricious a system really any better than a lottery? The anxiety that inevitably exists is focused and enhanced by the long interval between preparing applications (summer between junior and senior year) and final admissions (frequently as late as the following May). At Harvard College, competitive tendencies—reasonably diluted by the size of the class in Chemistry 20 or Biology 7—are aggravated by the system of House-based premedical advising, so that a student is particularly likely to be ranked in comparison to classmates in the same House.

Frequently proposed solutions to the problems just described are programs of early decisions for top students or early entry into medical school. I believe these to be even less desirable than the present system. Early decisions (e.g., late in the junior year) for a fraction of the total class have at least four undesirable effects: They compromise the flexibility inherent in the distinction between undergraduate and medical studies; they single out certain students as "select," probably enhancing competitiveness among others; they decrease mobility by giving an inside track to students at the undergraduate branch of the university to which the medical school belongs and a handicap to students at lesser-known undergraduate colleges; and they propagate the myth of omniscience of admissions committees. Combined undergraduate/medical programs are even more subject to these criticisms.

If tensions among undergraduates do sometimes get out of hand, it is not because good candidates are unable to cope with the required science. It is because medical admissions have become an unnecessarily elaborate ritual.

My own suggestions are for simplification rather than enhanced complexity. The most important thing is to speed up the admissions process itself. Seen from the perspective of the undergraduate faculty—and I intentionally draw here an exaggerated picture—admissions committees display a remarkable arrogance. They pretend to be able to judge the "whole candidate," relying heavily on personal interviews as well as on the written record. But I am in fact doubtful that the extraordinary scrutiny undergone by candidates for medical admission is really effective in selecting a better class. For example, are one or two half-hour interviews more reliable than thoughtful recommendation letters and careful reading of a written application? Eliminating interviews in all but special borderline cases would spare enormous time, effort, and expense. It would favor good writers over glib talkers and it would lend added weight to recommendation letters. But in the end I believe it would significantly reduce the duration and complexity of the admissions process, without radically changing the outcome.

What to Conserve and What to Change?

Education in the natural sciences is not "dehumanizing"; education in the humanities does not guarantee compassion. Some breadth is clearly desirable for aspiring physicians and is guaranteed by the distribution requirements at all American undergraduate colleges. Experience shows that good students have no difficulty in combining the fundamental nucleus of science courses with any possible concentration. There is neither need to reduce the nucleus nor wisdom in so doing, for medicine *is* a science, and research is vital to its present and its future. Here Harvard has a particular responsibility for leadership, proportional to the strength of its research establishment. It should make special efforts to attract as students those who hope to contribute to the advancement of medical science as well as to its practice.

If tensions among undergraduates do sometimes get out of hand, it is not because good candidates are unable to cope with the required science. It is because medical admissions have become an unnecessarily elaborate ritual. We should preserve the admirable flexibility inherent in separation of undergraduate and medical programs, continue to emphasize a balance of thoughtful scientific studies with effective humanistic learning, and recognize with humility that selection of candidates at the transition from college to medical school can be an efficient collaboration of both medical and undergraduate faculties. □

The Myth of the Premedical Student at Harvard

A career counselor attempts to separate fact from fable

by Patricia A. Walters

PHOTOGRAPH BY RICK STAFFORD

When one is seventeen or eighteen, pursuing to the best of one's ability a course prescribed by one's elders or mentors can be an all-consuming pursuit. The student has little time to question the process.

When I became Coordinator of Premedical Advising in the Office of Career Services & Off-Campus Learning at Harvard College four years ago, I became the recipient of many woeful tales about that *persona non grata* in liberal education: the premedical student. I still have not met this demanding, pushy, competitive premed that was described to me when I arrived. In contrast, I have been privileged (and delighted) to meet some caring, thoughtful, concerned, bright, eager young people. These are people whose very eagerness makes them easy prey to rumors suggesting that a certain study course or grade will make them more acceptable to the medical schools to which they hope to apply in a few years.

Many come to us as freshman with idealistic visions much like Martin in *Arrowsmith*. What happens to these eager idealists? Do they suddenly turn into exam-stealing, experiment-ruining "premedical students"? My answer is an emphatic NO! In actuality, as soon as these students arrive at Harvard College they begin to move within a prescribed system for premedical students about which little is known or understood by their contemporaries. This system is composed of specific courses, high grade-point averages, and high MCAT scores required by medical schools for acceptance. When one is seventeen or eighteen, pursuing to the best of one's ability a course prescribed by one's elders or mentors can be an all-consuming pursuit. The student has little time to question the process.

These premedical students may seem intense and preoccupied to others. Small wonder! If a student is compelled to view his undergraduate career as a series of high grades and scores which are prerequisite for admission to medical school, then the whole process may indeed become intense and preoccupying. If additional pressure is added by the awareness that a low grade may lower his grade point average and reduce his chance of acceptance to medical school, then the process of preparing for medical school may also become anxiety producing.

One commonly held misconception that may contribute to the premed stereotype is the belief that at least one-half or one-fourth of each class at Harvard College is premed. In fact, in 1980 there were 186 applicants to medical school in a graduating class of 1,659 people. Another rumor often heard is that one-half of the entering class is premed and that the majority drop out in the premed competition. In reality, from 1976 to 1980 approximately 200 people in each class declared themselves premed upon entering Harvard.

I conduct more than 400 premedical counseling sessions per year as well as collect and publish data on the premedical students at Harvard College. Over the past two years, as students have become cognizant that medical schools do not require science concentrators, our data at Harvard/Radcliffe show an increase in the number of nonscience concentrators applying to medical schools. In the data published for the Harvard/Radcliffe class of 1979 and in the data being prepared for the class of 1980, the number of nonscience concentrators increased from 28 to 38. This is an indication of the broad intellectual interests of our premedical students and the willingness and enthusiasm they have shown at the opportunity to express those interests.

It has been my experience that Harvard students, when given the time and the opportunity, show many other broad aspects of personality and individuality. I have talked with a freshman premedical student who spent his senior year in high school living alone on a boat and commuting to his high school because his parents had moved miles away and he wanted to graduate with his classmates. He was president of his class and graduated in the highest academic level of his high school. I have known of a premedical student who was coxswain of the varsity heavyweight oarsmen; another who ran an intramural program of 23 team sports in a Harvard House of 400 people while taking an EMT course, teaching CPR to his fellow classmates, and attending Harvard full-time.

I have known a multi-talented young woman who both managed the Harvard Collegium and participated in another choral group while pursuing her degree in biology at Harvard. She has also been involved in a House drama society and intramural athletics. I remember another Harvard graduate who worked with learning disabled children and adults for two years, returned to Harvard for his premedical requirements, and taught several college courses to support himself before being accepted to medical school.

In 1974 a Harvard premedical student became concerned about the rural health care practiced in this country. With the endorsement and assistance of the Office of Career Services and Off-Campus Learning, the Rural Health Apprenticeship Program was begun. This is a student-run program that seeks to expose Harvard/Radcliffe undergraduates and graduates to the realities of rural health care before they become health professionals. The program places the students in rural practice settings with practicing physicians or community health care programs. Certainly the student who took the initiative in developing this program demonstrated concern for health care on a national level—a concern not indicative of the stereotypical premed.

Fellowship applications constitute an additional area in which premedical students depict a wide range of interests, global concerns, and success in competition. Last year the Harvard College recipient of the Luce nomination was a premedical student. For the

Patricia A. Walters is Coordinator of the Health Careers Advisory Program for the Office of Career Services & Off-Campus Learning at Harvard University.

One commonly held misconception that may contribute to the premed stereotype is the belief that at least one-half or one-fourth of each class at Harvard College is premed.

past three years over one-half of the recipients of the Churchill fellowship have been premedical students. According to the fellowship advisor at the Office of Career Services, some of the strongest candidates for fellowships are premedical students. Premedical students comprise a large portion of the students seeking study abroad opportunities. Eight of the twenty students selected by the Association Atlantique for work experience in France were premedical students. This certainly indicates a breadth of experience and a willingness to explore and take on new experiences—a definite contradiction to the commonly perceived narrowness of the mythical premed.

I applaud the recent endeavors of medical schools to broaden the base of acceptance to medical school by stressing their willingness to accept non-science concentrators. I urge that the study of humanities and social sciences not become a requirement of the future. I would rather see a reduction of science requirements to permit more freedom of choice for the individual.

As I have indicated in the preceding

Faith, Hope and Verity

Anyone who has ever doubted that applying to medical school is serious and daunting business would be quickly disabused by a glimpse at the 101-page *Guide for Premedical Students at Harvard and Radcliffe.* Its author is Patricia Walters, Coordinator of the Health Careers Advisory Program, which operates under the aegis of the Office of Career Services & Off-Campus Learning.

The tone of the *Guide* is warm and reassuring, yet it is, essentially, a how-to manual—listing all the tools (MCAT's, course requirements, letters of recommendation), techniques (when to file applications, what to say during an interview, how to secure financial aid), and even repairs (for the ten to fifteen percent of Harvard premeds who fail to turn up even one acceptance notice). All this is wrapped in a thick blanket of emotional support from the author, probably the premed's most devoted advocate.

Walters sees little evidence of a "premed syndrome" at Harvard College; but the stereotype of would-be doctors groveling for grades and sabotaging their classmates' lab work has become a particularly thorny issue on her side of the river. She even devotes a couple of paragraphs to the subject early in the *Guide*:

> In the past ten years, premeds seem to have developed a reputation for being aggressive, ambitious, and competitive. This reputation is in part an outgrowth of the fact that premeds are often focused and goal-oriented at a time when many young adults are searching for both their individuality and their futures.
>
> As a freshman, you may or may not experience these stereotypes first hand, but you will probably become aware of them. I strongly believe that the prospect of dedicating oneself to the study of medicine is an exciting one. Your desire to become a doctor is something which deserves careful attention, and we will provide as much of that as possible at the Office of Career Services & Off-Campus Learning. Your ability to make it through difficult courses and to work toward your goal is an achievement; be proud of it.

While she maintains that "premeds don't talk, look, or act any differently" from their classmates, Walters appreciates the academic rigors and psychological pressures of premedical training. Her role, she says, is "mostly just offering an answer or a solution"—to help premeds control their anxieties and channel them into constructive action. In order to set the record straight about the magnitude of competition and the overall chances of acceptance, she publishes comprehensive statistics on the percentage of Harvard-Radcliffe students who are offered places in medical school (these days, an impressive 84-89 percent of applicants). Such data can be a psychological boost, particularly to those who labor under the commonly held misconception that only about one in ten candidates is successful.

Walters also offers pointers on course planning, since premeds have to fulfill requirements for their concentration, the Core Curriculum, and medical school—a triple burden which decreases the number of electives they can take. "We make it our business to see how one course can satisfy two requirements simultaneously," Walters explains. "Bio 15, for example, could possibly fulfill the Core science requirement as well as one of the medical school prerequisites—although it doesn't offer the best preparation for the MCAT's."

Anxiety about course requirements is natural, Walters believes, and shouldn't be termed a "premed syndrome." Furthermore, many premeds simply love science, she says, and she bridles at the implication that they are by definition narrow or dehumanized. Whereas most premeds once assumed that more science was better, Walters senses a reverse situation germinating:

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I urge that the study of humanities and social sciences not become a requirement of the future. I would rather see a reduction of scientific requirements to permit more freedom of choice.

paragraphs, the premedical student at Harvard College is typically a caring, thoughtful, and intelligent person interested in health care in its broadest sense. At times the process of preparing for medical school produces preoccupations of its own. This preoccupation creates an image of these students that I feel is invalid. I hope to help foster understanding on the part of others concerning the pressures on and challenges undertaken by the premedical student.

Derek Bok, the President of Harvard University, has said that through the study of humanities and social sciences our young people gain an invaluable perspective that makes them wise decision-makers and practitioners in the professions. The talent, creativity, initiative, and ability to broaden their perspective is present in these young premedical people. It is to our advantage to encourage and reveal these traits, to dispel the myth of the premedical student, and to create an atmosphere where these students can flourish and not flounder beneath the myth. □

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some students are now convinced that humanities majors are favored by admissions committees over science majors.

Walters can spot the danger signals when the pressures on individuals appear to be insurmountable. Sometimes she advises postponing the application process until a year or two after college, when time spent away from the stresses of academia, perhaps gathering experience in a health-care setting, can help to defuse some of the anxiety. She might also recommend postponement for the "closet premed" who, in an effort to avoid being stigmatized, may hide his intentions to apply to medical school, perhaps until the senior year—neglecting to take advantage of the advisory system and failing to rack up the necessary requirements. In this case, some additional course work may be called for.

Although Walters is available to counsel students on careers in nursing, dentistry, and public health, her clientele leans heavily toward medicine. For the occasional premed who seems ill-equipped for this profession, she provides information on alternative paths. Interestingly, she notes, other careers are seldom pursued, because medicine is still the most prestigious choice, and "if they can't be at the top of the field, they don't want to be anywhere in it."

The House-based advisory system works best with advisors who have been out of medical school for a few years, she maintains: not only have they gained some perspective from their additional years of experience, but those advisors who are currently medical students are still feeling their own set of pressures. Furthermore, the demands of medical school reduce a tutor's accessibility. As Walters sees it, "When a premed is feeling especially anxious about something, he or she should be able to talk about it as soon as possible, rather than sit on it—which usually only adds to the sense of panic. Of course, that's one of my roles, too. If a tutor or advisor is unavailable, the students know they can probably reach me during the day, so I can be a back-up or safety valve if necessary."

Walters believes that the disruptive effect of personal interviews during the senior year could be remedied somewhat if more schools could send representatives to Harvard, but she acknowledges that—despite the time and cost involved—students find it useful to be able to compare various schools and discover for themselves which ones they prefer. She dismisses the prospect of standardized applications with a mixture of amusement and skepticism, because schools "could never agree on a standardized format." Even if such a measure was introduced, it might not be appropriate since different schools look for different qualities in their applicants—some scouting for talented researchers and others for all-around practitioners.

The premed *Guide* recommends applying to eighteen or twenty medical schools—a burden Walters considers time-consuming but not intellectually taxing. In some cases, essays written for one application can be used almost intact on others. She observes a modest but discernible trend among Harvard students to apply to fewer schools, although there are still those at the other extreme: one member of the class of '81 completed 45 applications. "I wish I could say just do four or five applications," Walters says with a sigh, "but if four or five aren't enough, I don't want to bear the responsibility."

The primary message of the *Guide*, she concludes, can be summed up in two words: GET ORGANIZED. For in the end, the plight of the premed is quantitative—so many courses to take, so many requirements to fulfill, so many applications to complete. And with all the other things going on at Harvard that have nothing whatever to do with medical school, no wonder the prospective doctor feels a need to develop a kind of tunnel vision, lest he be distracted from the awesome task at hand.

After four years as Health Careers Advisor, Walters conveys a sense of pride in the accomplishments of her office. "What we do helps," she says unequivocally. "Students know they have lots of support, both from us and from the Houses. It's up to them to take advantage of it."

—Laura Singer

At Harvard Medical School, where a 'balanced and liberal education' is encouraged, the prognosis for syndrome-afflicted applicants is not favorable.

The View from the Admission Office

by Oglesby Paul

It is always valuable to have the views of alumni about admissions and we welcome this report as we did the earlier report of a committee appointed by the Faculty Council, chaired by Dr. Samuel Hellman. I am impressed that our Admission Committee members, both faculty and student as well as a committee member representing the alumni, themselves represent very varied backgrounds and interests in science and in the non-scientific world.

A few specific comments:

We encourage our applicants to have a good exposure to the humanities and to have the benefits of varied life experiences. We do not care what they major in but do emphasize a broad course distribution including a solid exposure to the humanities. About eighty percent of the total applicant pool and of the group we finally select have chosen to major in science. While I hope we shall see this drop decidedly in time, it may be forgotten that there is some justification for the practice.

Some students major in science because this is what they enjoy most and they want to learn more. Some major in science in order to find out for themselves what the scientific world is like and whether or not a career in science is appropriate. A few major in science because the atmosphere of the institution—including the influence of alumni, faculty, and students—emphasizes science and these courses provide the best instruction and learning opportunities in that environment.

Our interview process exists at the Harvard Medical School—unlike the graduate schools of law and business which have no interviews—especially to recognize the personal attributes important to the complete physician. To a large extent, it seems to accomplish this. Incidentally, I do not believe that most of our applicants exhibit the characteristics of the "premed syndrome." At times, however, I am concerned that our great emphasis on desirable personal qualities of warmth and concern for the individual, etc., as perceived in two one-hour or shorter interviews may penalize both the truly brilliant student destined to be a leader in seeking new knowledge who lacks a full measure of these at this time, as well as the somewhat shy young man or woman who has no lack of warmth or compassion but does not project these optimally in two necessarily brief and stressful interviews.

We look upon the Medical College Admission Test (MCAT) as being of limited value. The test does have one special usefulness, however: because grade point averages and MCAT scores tend to correspond, when the MCAT scores are low and grade point averages high, we have reason to suspect the reliability of the grading system in that institution and we may make additional investigations. This is especially important with certain small colleges about which we have very limited personal knowledge.

I would also indicate my preference for having the minimal number of admission requirements. I believe the best way to encourage a broad education is through the examples set by and the influence of alumni and faculty, and discussion with premed advisors and other college officials and many premedical students, as we are now doing, rather than by adding more required courses.

I have proposed a trial of a limited early admission process here but it was not supported. Harvard does not accept change readily.

Finally, that the Harvard Medical School currently has a student body

Oglesby Paul '42 is Director of Admission at HMS and Professor of Medicine at the Brigham and Women's Hospital.

PHOTOGRAPH BY LISA DREW

We do not care what our applicants major in, but do emphasize a broad course distribution, including a solid exposure to the humanities.

with many healthy interests outside of biological science may be learned by a survey I made of fifty consecutive applications for admission of students whom we accepted for enrollment in September, 1981. All the fifty students had listed extra-curricular activities, and in twenty-eight it was clear that these represented both major commitments of time and substantial achievements *not in science* but outside the field of science. In many instances, students had been active in more than one area. Thus, one applicant had performed as a soloist (piano) with the Pittsburgh Symphony, one had been a member of the American Ballet Theater, another played in the Herbert von Karajan International Youth Orchestra. Two had been very active in journalism, and four had been varsity athletes (soccer, rugby, crew, and both track and swimming) and one was on the junior varsity. Yet another student was a co-founder of a human rights committee in college and taught Sunday School and was a religion discussion group leader, one coordinated the Catholic campus ministry and edited its newsletter, and one was a United Methodist Church counselor. Yet another had been a lawyer, one spent a year in Vista working with parolees, one was the head of an art gallery, and one was the founder and captain of a Quiz Bowl team which appeared nationally. Another six had studied abroad for more than two months and five others were active in student government. Yet another had served as a foreman in the roofing business.

My own class in medical school was a great one. However, it certainly lacked this degree of diversity. □

Wading Through the Applicant Pool

If the "premed syndrome" exists, then its impact must surely be felt at admissions offices, where nervous premeds can be seen pacing the halls while waiting for their interviews (in which legend has it they will be asked to open a nailed window, or be spied upon responding to a desk-top Rorschach).

The Alumni Survey Report suggests that syndrome-afflicted students often have misconceptions about the admissions process, and asks whether the requirements for admission to HMS have fostered an "undesirable atmosphere at the college level."

For his perspective on these issues, we spoke to the Director of Admission at HMS, Dr. Oglesby Paul, who responded to the report with both some related written comments (above) and a brief interview. We also looked at the HMS admissions literature.

Dr. Paul indicated in the interview that the students he considers for Harvard do not usually show signs of having been through a "premed syndrome," and that those who come across as unduly aggressive or narrow are weeded out rather early in the admissions process. He feels that the "premed syndrome" is a condition (perhaps over-dramatized) which applies especially to those who are marginally qualified, and who are therefore over-anxious about getting into medical school. Applications from afflicted premeds, he explained, are not only characterized by self-centered writing samples and evidence of limited interests, but also often don't meet the Harvard qualifications.

Meeting those qualifications is a rather tall, though clearly defined, order. The description of requirements in the admissions materials spells out that "although applicants are expected to have demonstrated aptitude in the biological and physical sciences during their undergraduate years, narrow specialization in a science to the exclusion of the humanities and social sciences is undesirable...Students are urged, therefore, to strive not for specialized training but for *a balanced and liberal education*. No preference is given to applicants who have majored in science over those who have majored in humanities." Under the list of recommended courses, it is again stressed that the school "is especially interested in broadly educated students."

There is one exception to the demand for a well-rounded applicant —the brilliant scientist, whose "narrowness" Dr. Paul finds to be no more a product of a syndrome than the specialization of an Olympic gymnast or a first-rate musician. Such a science specialist should not be penalized, he feels, for taking the courses which best prepare him for his field.

The ideal candidates, however, according to a 1979 Faculty Council report, are "those individuals whose academic performance is accompanied by a constellation of moral qualities which include integrity, maturity, commitment to society, capability to relate to people, and broad human interests."

Are these criteria clear to the students? Do they often have misconceptions about the admissions process? Dr. Paul finds that they usually know quite well how they are being selected. His major concern is rather that students don't always agree with the *result* of the process.

In a system which takes only 15,000 to 16,000 out of a 36,000 applicant pool, Dr. Paul pointed out, "you're going to be left with nearly 20,000 students who don't get in. They think the system is poor. And their sponsors complain that the system is wrong."

Dr. Paul also pointed out that the selection process creates an inevitable competitiveness. The biggest pitfall, he finds, is that "sometimes a student who is a good operator may have an advantage over somebody who is more down to earth. But in anything in life which has competition, you're going to have some of this atmosphere.

"I don't think the 'premed syndrome' is as bad as the committee thinks," Dr. Paul concluded. "And I think it's something which at present is being reasonably well handled."

—Lisa W. Drew

'Getting Into Medical School'

On becoming a premed late in the game — and winning

by Kenneth Klein

After I was accepted by Harvard College, one of the forms they sent asked for my anticipated major. I knew I'd probably stick with chemistry but I didn't want to rule out psychology. I agonized over the form for hours [and finally] wrote down "Undecided."

By sophomore year I still wasn't ready to commit myself. Psychology had deteriorated into a series of pigeon experiments. But my chemistry course, organic chemistry, was no more inspiring. To me organic chemistry was merely the memorization of hundreds of chemical reactions. That wasn't science! But the premeds in my class delighted in cramming all the formulas into their compulsive little heads. Organic chemistry and premeds became inseparably entwined in my thinking. I despised them both.

Every other day I seemed to bump into these premeds going to meetings of the premedical society, whatever that was. It seemed to be the doctor's equivalent of the 4-H Club. What went on there? Did they learn secret medical

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PHOTOGRAPH BY ROGER SLEVIN

handshakes? How to set up a tax shelter? How to smoke cigars? I never knew, and I never cared.

By junior year I had kissed organic chemistry good-bye, and with it, most of the premeds. My chemistry course then was physical chemistry. It was much more beautiful than organic; what I was learning sang like poetry. I officially became a chemistry major.

But as the year went on clouds began to gather on the horizon. Now, in the midst of graduate courses, I found that things weren't coming so easily to me anymore. I still loved chemistry, but it grew to be more and more of a struggle. Sadly I recognized the obvious: I couldn't become a good chemist if I wasn't good at the chemistry.

But if I didn't go into chemistry what else could I do? I had begun doing volunteer work in a state mental hospital. I loved this work with the mentally ill and knew I was good at it, but it wasn't very scientific. And besides, becoming a psychiatrist was out of the question. That would mean going to medical school.

A course in neurophysiology turned out to be my salvation. There was both the beauty of science and the relevance to human behavior. And as time went on I even developed an intellectual crush on my professor. Neurophysiology became more and more glamorous.

I decided to apply to graduate school in neurophysiology. But one day my professor suggested that I consider medical school. With an M.D., he said, not only could I do lab work, but I'd be able to do human research too. Grant money and an academic position would be easier to come by as well.

I began mulling over what he had said. Unfortunately, it made sense. For months I struggled with the shame of taking the easy way out to earn the title "doctor." For a Ph.D. you had to do research and write a thesis. To get an M.D., though, you merely needed a good memory and a strong stomach. But the more I mulled, the more sense an M.D. seemed to make. After I had agonized a lot, medical school won out.

So, as my senior year got underway, I began frantically applying to medical schools. I'd made my decision perhaps ten years later than most of the competition; I had a lot of catching up to do. The first step was meeting with the premed advisor for my dorm. My classmates had been cultivating his favor for three years of premedical society meetings—how could I ever hope to wring a decent letter of recommendation out of him?

He urged me to apply to at least eight or ten schools. Some could be places where I'd really like to go, but at least a few should be "safety schools," chosen just because they would be easier to get into. He told me to sign up to take the Medical College Admission Test right away. Doing well on this medical equivalent of the SAT was apparently crucial for a good shot at medical school. He also warned me I'd better get several strong letters of recommendation. And I'd better put a lot of thought into my application essays—I had to justify choosing medical school so late. I thanked him for all his advice and went home to dream up an essay.

The fall was thick with thoughts of medical school. In October I took the dreaded MCAT's. I spent hours slaving over my application forms. I went to see some of my chemistry professors and sheepishly solicited letters of recommendation. I felt guilty, as if asking a rejected girlfriend to endorse me to a new woman.

In early winter, representatives of most of the medical schools to which I was applying came to Boston to hold interviews. I rehearsed answers to hundreds of theoretical questions: "I see there are no doctors in your family, Mr. Klein. How do you know what being a physician will be like?" "You've decided very late to become a doctor; can you convince me you're really interested in medicine?" "How do you feel about national health insurance?" "Do you support the AMA?"

Rumor had it that there would be trick questions, and insults designed to see how I'd react under stress. It didn't surprise me, this sadistic rush week of interviews before being considered for the medical fraternity.

Despite the rumors of gimmicks and trick questions, the interviews turned out to be quite benign. I was asked why I wanted to go into medicine and what attracted me to neurophysiology and had I read any good books lately.

By the time my interviews were finished, I had decided I wanted to stay in Boston. But the more I wanted to stay, the more impossible it seemed that I'd be accepted at Harvard, the only school in Boston to which I'd applied. As my premed advisor had repeatedly told me, the competition was fierce. "Harvard may be the best," he said chauvinistically, "but there are other good places too. Frankly, Ken, you should be happy to get into anyplace at all." □

"...and give me good abstract-reasoning ability, interpersonal skills, cultural perspective, linguistic comprehension, and a high sociodynamic potential."

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Reflections on the Premed Experience

Academic excellence without destructive competitiveness

by Dorene A. O'Hara

As a current third-year Harvard medical student, I read the Alumni Survey Report on the "premed syndrome" with great interest. Although along with many of my HMS classmates I saw little or no evidence of a "premed syndrome" as an undergraduate, clearly such a syndrome does exist— for some students, in many schools. I know a current Harvard premed, for example, who sees no reason to take history or literature—he knows "all that" already. He instead took a tumor immunology course at Sidney Farber as a sophomore, and plans to enroll next year in one of the medical school anatomy courses. He is a fine person, very dedicated, obviously talented, but also narrow. He thinks the way to get into medical school is to go there before he even applies.

Some of my HMS classmates have witnessed first-hand the kind of viciously competitive behavior described in the Alumni Survey Report. A UC Davis graduate describes huge classes with little or no student-teacher interaction, mindless multiple-choice tests, and a fiercely competitive atmosphere in the lab. Another, who majored in biology at Harvard, said that students were afraid to leave the organic lab because glassware would be stolen. Certainly no one would help anyone else find a needed chemical, much less help out with a difficult experiment or homework problem.

We can all recognize that this degree of rivalry is detrimental. It is also pointless: it can have no real effect on either one's own or anyone else's admission to medical school.

What follows is an attempt to distinguish between a desire for academic excellence and a destructively competitive approach to learning. I also offer a description of the ways some colleges and universities help steer students into a productive premedical experience.

The two classmates I mention above, both dedicated and talented, survived by ignoring their competitive peers and spending their time doing what they were supposed to be doing—learning. I mention their experiences to point out that although some students *do* emerge from college as well rounded individuals, there are some measures colleges can take to help limit negative influences.

The following observations and suggestions in the Alumni Survey Report particularly stand out: there is a

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A classmate who majored in biology at Harvard said her organic lab was so competitive that students were afraid to leave the lab bench because glassware would be stolen.

strong belief that straight A's (or close) are necessary for acceptance to medical school; most premeds feel that they should be science majors; the MCAT in its current form is inadequate; an early admission and deferment program deserves serious consideration; and a public relations program is needed to emphasize the wide range of medical careers in addition to research which can be pursued at Harvard.

The report also emphasizes that much of the problem lies in the beliefs premeds have about admissions committees and medical schools. I am not sure that all such beliefs are "false." I too thought that a school like Harvard was chiefly oriented toward basic science and felt that I should tailor my course selections accordingly. So did most of my classmates at HMS.

I distinctly remember looking at a book in the premed advisory office as a college freshman and seeing that students majoring in chemistry, biochemistry, and biophysics had the highest percentage of acceptances—at that time around forty-five percent—while the biologists (in far greater numbers, of course) had about a thirty percent acceptance rate. How could one not be influenced by those numbers? That information, and a recommendation in the Harvard Medical School premed booklet to take physical chemistry, told many of us that medical schools were looking for students with rigorous scientific backgrounds.

Although some of my HMS classmates decided to become physicians as seniors in college, for others it was a lifelong dream. Can anyone blame students with that kind of ambition for doing whatever they think medical schools want?

Coming from a state university (University of Connecticut) with few acceptances at Ivy League medical schools, I felt perhaps even more than most Harvard premeds that I needed a straight A record. Without a doubt I put more work into organic chemistry than any other course. I also felt that the MCAT's could dictate whether or not I would get into medical school, and most of my classmates thought the same. I, like so any others, paid some $300 to a well known test-preparation firm for the practice and discipline of their MCAT course. Those of us who did well spent many hours mastering the material as well as the test format. Both were important, but in the last few sections of the MCAT on analysis and scientific reading, trick questions and the confusing format made prior practice almost mandatory for a high score.

One of my college classmates, currently on an NIH Medical Scientist Training Program grant at a fine medical school but not accepted to Harvard, sincerely felt that not taking a prep course and not scoring in the highest percentiles on the boards made the difference in his application. Was he right?

I am also not sure that an emphasis on both the sciences and high grades is necessarily a negative influence. One look at a premed advisory booklet will show that majoring in a science is an efficient way of completing all the premed requirements and saving room for electives. Also, many of us are in medicine because we are fascinated with the laws of physics and chemistry as they apply to the human body. (For those with unusual aptitudes in this regard, Harvard and MIT have collaborated on the HST program, answering a clear need for physicians with highly technical backgrounds.)

Even for those planning to enter less technical areas of medicine, a minimum background in physics, chemistry, and calculus seems essential. My non-scientist classmates often had great difficulty with quantitative subjects such as renal pathophysiology, blood-gas relationships, and neuro-

PHOTOGRAPH BY RICK STAFFORD

physiology. Mere memorization can never do justice to these subjects. A background in science provides the concepts which allow a student to *understand,* and therefore retain, the vast amount of material presented in the preclinical years. In the intensive care unit, the operating room, and on medical wards where these laws are applied, the clinical relevance of all that physics and chemistry is now becoming clear to me.

In order to reasonably evaluate and identify the "premed syndrome" one cannot merely look at course selections, MCAT scores, and grades: a great number of those who do well are hard-working, dedicated individuals and superb scientists. I submit that the difference between students who are affected by a "premed syndrome" and those who are not is that the former try to obtain top grades for the purpose of getting into medical school, while the latter attempt to learn the basic science and humanities necessary for a well-trained physician, and, through that knowledge, to gain entrance to medical school.

The Alumni Survey Report focuses on external factors when any problem that does exist is an internal one. The "premed syndrome" is a problem of motivation, attitudes about learning, and overall goals. It is difficult, if not impossible, for a university to approach this problem on an individual level. Instead, a system must be devised which discourages the negative aspects of premedical education without belittling scientific interest and achievement. I am suggesting we take a lesson from B.F. Skinner—reward the desired behavior (creative learning) to resolve the problem of destructive competition (which avoids the true objective of education).

My HMS classmates have described two systems which apparently worked well to discourage syndrome behavior: individualized programs in large universities, and small colleges with personalized atmospheres. I offer my own undergraduate experience and that of a classmate who went to Williams College as examples.

The University of Connecticut is a large state university with a wide range of student interests and talents. Within the university is an honors program, a group selected on the basis of high school records, SAT's, and continuing performance. The honors premeds in my year were all accepted into medical school.

Our classes were small; there were fewer than thirty students, for example, in organic chemistry. Teaching was very theoretical, from advanced texts. The professors were accessible to the students in the classroom and the lab. They also conducted problem-solving sessions. I even remember a particularly bad day in the lab when the course director came over and helped me with my experiment.

Tests consisted of essays and problem-solving. In physics and inorganic we could bring note cards or books—for all the good it would do us. There was no time limit. One bad grade could be redeemed by sessions with the teacher and extra-hard work. We were told from the outset that evidence of effort and improvement were just as important as test grades. Study groups were encouraged. In the lab, the professor told us that one milliliter of pure product was better than five of garbage.

This attitude of genuine concern for students and dedication to promoting a creative learning atmosphere helped diffuse the tensions and fears normally engendered by science courses. In that setting, we were science majors because we wanted to be, and studied not merely for a grade but in order to learn. Of course, some students will work hard out of interest in the subject no matter what the setting. They may even do well on nit-picking multiple-choice exams. My point is that students are more likely to make a sincere effort at learning the material if grades are based on evidence of understanding rather than on success in memorization. Problem-solving is a test of the former; easy-to-grade multiple-choice exams more often test the latter.

My HMS classmate from Williams, a small liberal arts college which sends a few students each year to HMS, lists a number of factors which he thinks contributed to a good premed atmosphere there. Most important, he said, was a social and academic climate in which falling into anything resembling a "premed syndrome" was considered silly, unnecessary, and even obnoxious.

Members of the faculty, who were well aware of the potential dangers, played a role by trying to keep the subject of applying to medical school in the background as long as they could. It is not until one's junior year at Williams, when one must begin gathering recommendations, that there is any formal contact between students and the premed committee. Nor is there any premed society.

Professors in heavily premed-subscribed courses would sometimes say at the beginning of a course that

I too thought that a school like HMS was chiefly oriented toward basic science and felt that I should tailor my course selections accordingly.

they disliked both grade pressure and students who applied it. In organic chemistry, which rightly or wrongly is still commonly viewed as the make-or-break course for premeds, it was emphasized that no grading curve was used and nothing could be gained by hurting someone else's chances for success.

But at least as important as the way courses were structured, my classmate recalls, was the general atmosphere of the small liberal arts college. Even in large lecture courses (rarely bigger than 150 at Williams) students often felt close enough to professors to not want to pester them with grade worries. "The professors," he says, "were usually likeable. You could see they loved biology, chemistry, or physics, and sometimes seemed a little saddened that so few of the students were actually going to be scientists. You hated making it worse than it had to be." In addition, people wanted consciously to preserve the atmosphere for learning there. Those who poisoned it with "premedism" were not popular.

Premeds also tended to be close enough to each other not to want to hurt others' chances. Indeed, there was a lot of camaraderie. He recalls: "My roommate, who is incidentally also a classmate at HMS, routinely helped other premeds in physics with their problem sets while taking the same course."

The atmosphere also made it difficult to become too narrowly focused on science. One's close friends were frequently interested in other things and made science majors feel as if they were missing too much by not taking some philosophy or history courses. Premeds at Williams were also often very visibly involved in the general life of the campus in ways, my classmate says, that "made it clear you could be sane, premed, and still get into medical school.

"It wasn't as if no one there cared about grades," he adds, "but just that it didn't characterize the place, and premeds were probably no worse than anyone else. So-called 'hardcore' premeds were the exception.

Harvard's premed program is undoubtedly much larger than either of the two described above. But whatever its size, it seems clear that the teaching approaches used at UConn and Williams would help prevent syndrome behavior.

Another strong point in many smaller programs is the advisory system. I remember the first of many encounters with the premed advisor, who was also the chairman of our honors program and teacher of the first-year chemistry course. He said that his goal for each student was to help him or her develop into an "interesting person." He insisted that we major in what interested us, because that way we would want to work hard. Like many premed advisors, he encouraged independent study (a requirement of the honors program anyway). He began files on us as freshmen, scheduling meetings at least twice a year to get to know us so he could write meaningful letters for each of us at application time. We were also encouraged to get some experience in practical medicine, such as volunteer work, so we would be more aware of why we wanted to be a part of medicine.

In our junior year my advisor scheduled practice interviews so we would be prepared to speak about ourselves, our research, topics of current importance in medicine such as national health insurance, and ethical dilemmas such as the then-current Quinlan case.

I realized very quickly that I had to know myself better and be able to verbalize my ethical views in order to do well in a medical school interview. Certainly the sessions caused me some anxiety; they stimulated much thinking and reading—which was the honors advisor's intention. And my interviews turned out to be a pleasant experience largely, I think, because of this preparation.

I am sure many of the advisors at Harvard and other colleges are providing this kind of service for their students. I am also convinced that not every premed becomes a competitive, narrow-minded robot. Some of the factors described above which encourage a healthy learning environment may help prevent the "premed syndrome."

Perhaps the most difficult task will be convincing college students that straight A's and high MCAT's really are *not* the only factors in their acceptances. That may require changing the admissions requirements, rewriting admissions booklets, and modifying the advisory system. As long as these beliefs persist, and grading and testing procedures reward rote memorization and unethical behavior, premed students will be under too much pressure to be able to learn for the sake of learning. □

Perhaps the most difficult task will be convincing college students that straight A's and high MCAT's really are *not* the only factors in their acceptances.

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